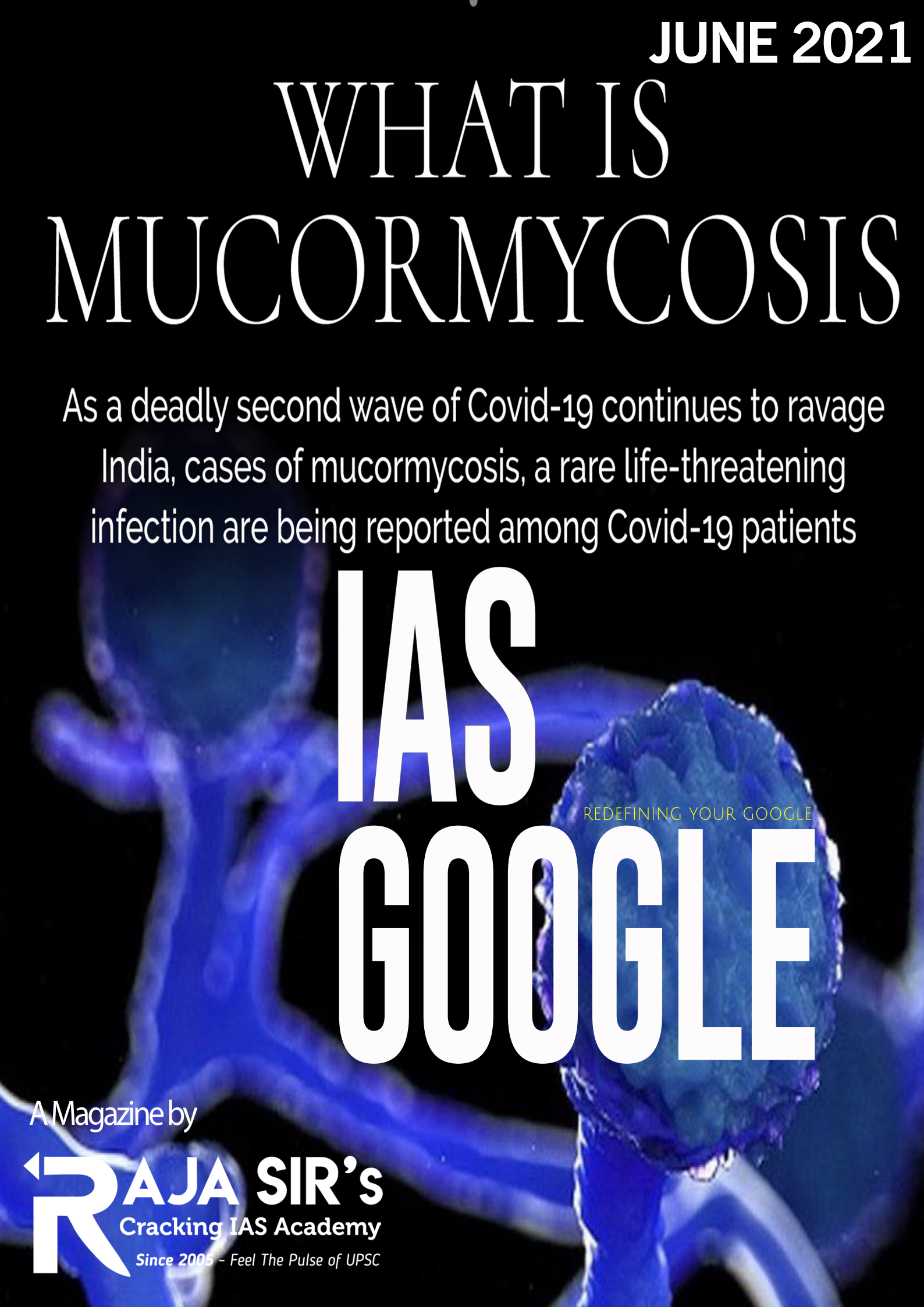
JUNE 2021

# WHAT IS MUCORMYCOSIS

As a deadly second wave of Covid-19 continues to ravage India, cases of mucormycosis, a rare life-threatening infection are being reported among Covid-19 patients



# IAS GOOGLE

REDEFINING YOUR GOOGLE

A Magazine by

RAJA SIR's
Cracking IAS Academy
*Since 2005 - Feel The Pulse of UPSC*

VISIT…

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# India's Act East Policy so far and beyond – Minding the Gaps

Recently, the relation between Singapore and India got a little bit tense due to New Delhi Chief Minister's recent remarks about a Singapore variant of Covid reaction.

Although the External Affairs ministry was quick to disown the critical comments, many Indian policymakers and foreign policy analysts presented a wider and larger challenge to India's standing in Southeast Asia as a whole.

Three developments over the past five years are testing Indian diplomacy in the region. First, the rising profile of China combined with growing China-India tensions; second, disappointment in the region with India's economic under-performance; and, third, rising concern in the region with India's approach towards its minorities, especially Muslims and Christians.

These developments warrant a review of domestic politics and how it impacts the **Act East policy of India.**

## Evolution of Act East Policy

- Ever since 1992 when Prime Minister PV Narasimha Rao enunciated a "Look East Policy" reaching out to Southeast Asia, India has engaged the region on all fronts — diplomatic and security, economic and people-to-people.
- Prime Ministers Atal Bihari Vajpayee and Manmohan Singh built on Narasimha Rao's foundation and constructed a robust relationship with the Association of Southeast Asian Nations (ASEAN), so much so that in 2007 Singapore's founder-mentor, Lee Kuan Yew, a longstanding India sceptic, went to the extent of naming China and India as the two engines of Asian economic growth.
- Continuing this approach, present Prime Minister Narendra Modi graduated Look East into an Act East policy.

## Importance of India's Act East Policy

- **Growth in economic relations with ASEAN countries:** India and the ASEAN have signed two trade agreements in goods and services, creating

one of the biggest trade areas with a market of 1.8 billion people and a combined GDP of about US$3 trillion.

- **Increase in private investments in Indian infrastructure:** A good deal of ASEAN private investment has also flowed into India in many sectors including construction of ports, highways, and food processing, shipping, and auto components.
- **Development of India's Northeastern region (NER):** India's Act East Policy is closely connected with its long-term vision of developing its Northeastern region (NER) which is considered as a gateway to Southeast Asia.
    - The connectivity projects in the NER will foster greater integration not only within the NER, but also externally with neighbouring countries.
- **Fulfilment of Strategic and geo-political interests:** India has now forged strategic partnerships with Indonesia, Vietnam, Malaysia, Japan, South Korea and Australia.
    - In addition, it has also established close links with countries of the BIMSTEC group of countries and the IOR.
- **Promotion of regional cooperation and integration:** The present Act East lays great emphasis on the connectivity programmes that link India's Northeast region with ASEAN countries.
    - India's Act East policy has a strong synergy with Japan's Free and Open Indo-Pacific and South Korea's New Southern Policy.
    - All three recognise the centrality of the ASEAN region and their economic and strategic interests converge in the Indo-Pacific and provide a great opportunity for mutual cooperation.

**What is going wrong with India's Act East Policy?**

- **India's decision to move away from regional trade grouping:** India's economic slowdown and inward orientation, expressed through the decision to stay out of the Regional Comprehensive Economic Partnership (RCEP) agreement, disappointed regional business.

- While ASEAN and Indian governments tried to maintain good relations, Southeast Asia's powerful business groups, mostly ethnic Chinese, began losing interest in India.

- **Socio-political turmoil in Indian region:** The growing concern about Hindu majoritarianism in India has impacted civil society attitudes in countries like Indonesia, Malaysia, Thailand and Singapore.
    - The growing assertion of a Hindu personality by India's present ruling dispensation has weakened India's soft power, globally and in this region.
- **Slowly becoming Act Indo-Pacific policy:** India believes in an Indo-Pacific that is free, open and inclusive, and one that is founded upon a cooperative and collaborative rules-based order.
    - India has placed the 'Indo-Pacific' at the heart of its engagement with the countries of South, Southeast and East Asia.
- **Delay in funding of projects:** The Ministry of External Affairs (MEA) depends on the Ministry of Finance (MoF) for funding, whereas the MoF depends on the Prime Minister's Office (PMO) for political and statutory directions.
    - The bureaucratic process often acts as hurdles, delaying the projects or funding.
- **Regional developments testing Indian diplomacy:** The rising profile of China combined with growing China-India tensions and the disappointment in the region with India's economic under-performance.
    - There is rising concern in the region with India's approach towards its minorities, especially Muslims and Christians.
- **China's accelerated rise since the trans-Atlantic financial crisis:** The growing assertiveness of the Xi Jinping regime initially generated a strong pro-India sentiment in the region with many ASEAN countries wanting India to balance China's enhanced power.
- **Weakened trade contacts of India with the region:** The developments have weakened the business-to-business (B2B) and people-to-people (P2P) connect between India and ASEAN despite the best efforts of hard-pressed diplomats.

**Measures to be adopted to address India's Act East Policy**

- **Completion of tasks promised in the Delhi Declaration 2018:** The three sets of tasks are worth mentioning:
    - First, complete and scale up the digital connectivity projects in Cambodia, Lao PDR, Myanmar and Vietnam;
    - Second, complete the Trilateral Highway (TH), resume the replacement of 69 bridges along the TH and negotiate the Trilateral Motor Vehicle Agreement (MVA); and
    - Third, continue with the high impact projects such as fellowships for integrated Ph.D. programmes to ASEAN scholars and set up a network of universities to encourage greater inter-university exchanges between ASEAN and India
- **Empowerment of Northeastern states in Act East Policy:** The Act East through the North East can flourish if the central and state governments work towards improving the connectivity in the region, particularly at the border areas.
- **Increased focus on BIMSTEC:** It is the natural connector of South and Southeast Asia.
    - The countries must enhance the negotiation process to conclude BIMSTEC MVA, BIMSTEC coastal shipping agreement, and BIMSTEC TFA.
- **SMEs drive the business within and across borders:** It is important to give special focus on SMEs which can build effective business networks across borders.
    - The projects such as the ASEAN–India SMEs Forum, special fund, etc., would fillip to trade and investment as well as integrating our producers and manufacturers in regional value chains.
- **Development cooperation projects:** It should be put in fast-track by avoiding cumbersome documentation and bureaucratic procedures.

- The EXIM Bank of India should open branches in all South, Southeast and East Asian countries and Pacific and also strengthens the resources of their existing outfits.

- **Cooperation and synergy among multiple stakeholders:** The greater coordination between Prime Minister's Office, Ministry of Finance, and Ministry of External Affairs is essential in implementing the Act East projects.
- **Increase in development of tourism industry:** Tourism is the most immediate 'money-making' opportunity, which has the potential to improve the connectivity between India and Southeast Asia.
    - Tourism is the most immediate 'money-making' opportunity, which has the potential to improve the connectivity between India and Southeast Asia.
    - The air connectivity between Northeast India and Southeast Asia is immediately needed to unlock opportunities.
- **Expansion of scope of Act East Policy:** India must add Bangladesh and Sri Lanka in our AEP.
    - A prosperous Bangladesh offers opportunities for India's Eastern and Northeastern states.
- **Strengthen border infrastructure, logistics and last-mile connectivity:** The construction of ICP projects should be completed and equip the ICPs with high-speed Internet, food testing laboratories, warehousing including cold chains, security, banking facilities, skilled human resources, etc.

**Road ahead**

- Indian diplomacy must take a fresh look at its **Act East policy and the constraints being imposed on it** by unsatisfactory economic performance and sectarian and communal politics at home.
- The **faster cross-border economic engagements**, particularly in the North East, will wipe out the insurgency, which is the main constraint for expansion of trade and investment.

- The **states must encourage the start-ups** which are exporting processed food, organic fruits and vegetables, flowers, high-end fashion products through borders.
- The time is ripe for India to **establish a strong economic partnership** with Southeast and East Asia and other Indo-Pacific countries.

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# ECONOMY

## 1.1 Ethereum breaks past $3,000

Recently, **Ethereum has broken past $3,000** in order to set a new record high in a dazzling rally that has outshone the bigger Bitcoin.

**Key Highlights**

- **Ether**, the token transacted on the ethereum blockchain, **rose 3% on the Bitstamp exchange** to $3,144.81.
- It reflects **improvements to the ethereum blockchain** and a growing shift towards **decentralised finance (DeFi**).
    - The DeFi refers to **transactions outside traditional banking** for which the ethereum blockchain is a crucial platform.
- The launch of ether exchange-traded funds in Canada and **surging demand for ether wallets to transact non-fungible tokens** such as digital art have also pushed up the price.
- The surging DeFi volumes continue to **push ethereum prices higher as investors gain confidence in crypto** and see ethereum as a safe second-place asset.

**Ethereum**

- Ethereum is the **community-run technology powering the cryptocurrency,** ether (ETH) and thousands of decentralized applications.
- It is **open access to digital money** and data-friendly services for everyone.
- It's the **world's programmable blockchain**.
- It enables **Smart Contracts and Distributed Applications (DApps)** to be built and run without any **downtime, fraud, control, or interference** from a third party.

**Ethereum .vs. Bitcoin**

- Ethereum is the name of the **network or underlying blockchain technology** which acts more as a **platform that developers can build apps on.**
- The **transactions on the Ethereum** network may contain **executable code,** while data affixed to **Bitcoin network transactions are generally only for keeping**

**notes.**

- The Bitcoin and Ethereum networks are different with respect to their overall aims.
    - The Bitcoin was created as an **alternative to national currencies** and thus aspires to be a medium of exchange and a store of value.
    - The Ethereum was **intended as a platform** to facilitate immutable, programmatic contracts, and applications via its own currency.
- The primary purpose of ether is **not to establish itself as an alternative monetary system**, but rather to facilitate and monetize the operation of the Ethereum smart contract and decentralized application (dapp) platform.

## 1.2 Network for Greening the Financial System (NGFS)

Recently, the **Reserve Bank of India (RBI)** has said that it has **joined** the Central Banks and Supervisors **Network for Greening the Financial System (NGFS) as a member**.

**Network for Greening the Financial System (NGFS)**

- It was launched at the **Paris One Planet Summit** on December 2017.
- It is a **group of central banks and supervisors** willing to share best practices and contribute to the **development of environment and climate risk management** in the financial sector.
- The Network defines and promotes **best practices to be implemented within and outside of the Membership of the NGFS** and conducts or commissions analytical work on green finance.
- Its aims to analyse the **consequences of climate change for the financial system** and redirect global financial flows in order to enable low-carbon economic growth.

**Significance for members of Network for Greening the Financial System (NGFS)**

- The RBI expects to benefit from the membership of NGFS by **learning from and contributing to global efforts on green finance.**
- The NGFS's purpose is to **help strengthening the global response required** to meet the goals of the Paris agreement.

- The NGFS aims to **enhance the role of the financial system to manage risks** and to mobilize capital for green and low-carbon investments.

## 1.3 2021 Index of Economic Freedom

Recently, the **Heritage Foundation** has released the **2021 Index of Economic Freedom**.

**Index of Economic Freedom**

- It is an **annual guide published to measure the progress** made in **advancing economic freedom** which it claims brings greater prosperity.
- The index ranks **12 indicators** from property rights to financial freedom under four categories i.e. **rule of law, size of government, regulatory efficiency and open markets.**
- It believes that the ideals of economic freedom are strongly associated with **healthier societies, cleaner environments, greater per capita wealth, human development, democracy, and poverty elimination.**
- The 2021 edition measures economic freedom **only in independent countries** where governments exercise sovereign control of economic policies.
- It relies primarily on the **World Trade Organization's annual World Tariff Profiles for trade-weighted average tariff rates** in order to reflect the most authoritative and consistent tariff information.

**Key Highlights of 2021 Index of Economic Freedom**

- **184 countries were covered** in the study this time and the period of study is July 2019 to June 2020.
- The Heritage Foundation decided to **exclude Hong Kong from its rankings** for the first time ever.
    - Hong Kong had **topped the list for 25 out of the previous 26 years** prior to the current year.
- **Singapore** topped the global ranking for the second year in a row in the latest Economic Freedom Index.
    - Singapore **increased its overall score by 0.3 points to 89.7** primarily due

to an improvement in the score for government spending.

- The global top five are **New Zealand** in second place with 83.9 points, **Australia** in third (82.4 points), **Switzerland** in fourth with 81.9 points and **Ireland** (81.4 points).
- The ranking of major economies is that the **United Kingdom is 7th** (78.4 points), **United States is ranked 20th** with a score of 74.8 points, **Japan 23rd** (74.1 points), **Germany is 29th** (72.5 points) and **China is number 107** scoring 58.4 points.
- The Asia-Pacific nations generally scored **lower than the world average in seven of 12 indicators** such as property rights, judicial effectiveness, government integrity, monetary freedom, trade freedom, investment freedom and financial freedom.

**India and 2021 Index of Economic Freedom**

- India came in around the middle of the pack among **Asia-Pacific countries ranking 26th out of 40 countries**, **scoring 56.5 points.**
- Globally, the Foundation rates India's economy as the **121st freest.**

## 1.4 'State of Working India 2021: One Year of Covid-19' Report

Recently, the **Azim Premji University** has released on report titled **'State of Working India 2021: One Year of Covid-19'.**

- **Employment in Informal Sector:** There was a large increase in informal employment due to coronavirus.
    - The report highlighted that salaried employees fell back on self-employment and daily wage work.
    - The report shows that nearly half of formal salaried workers moved to informal work, either as self-employed (30%), casual wage (10%) or informal salaried (9%) workers.
- **Impact on different economic sectors:** Agriculture and trade emerged as the fallback sectors, while education, health and professional services sectors saw the highest outflow.
    - The report stated that around 18 per cent of education sector workers have

now moved to agriculture.

- The agriculture sector absorbed 10-20 per cent of workers from other sectors.
- Around 20-35 per cent of workers from other sectors are now in trade.

- **Implication of Caste and Religion:** The general category workers and Hindus were more likely moved into self-employment, while the marginalised caste workers and Muslims fell back upon daily wage work.
- **Impact on workers:** The self-employed and informal workers faced the highest loss of earnings.
    - The casual and daily wage worker saw a dip of 13 per cent in salary from a year-ago, while self-employed saw 18 per cent dip, temporary salaried saw 17 per cent dip, and permanent salaried a 5 per cent dip.
- **Impact on gender employability:** It highlights how women lost more employment than men during the pandemic last year.
    - It discovered that there was no recovery of employment for 7% men whereas in women the rate was 46.6%.
    - It found that while "men (were) more likely to move into informal employment, women (were) more likely to move out of the workforce.
- **Implication on poverty:** The damage to the economy due to the pandemic was enormous and the poor were hit the hardest.
    - The report revealed that 230 million additional individuals fell below the national minimum wage poverty line.

**Challenges posed by Pandemic**

- **Borrowings and debt trap:** The poorest 25% of households borrowed 3.8 times their median income, as against 1.4 times for the top 25%.
    - The report said, nearly 230 million additional individuals fell below the national minimum wage poverty line.
- **Inadequate policy response:** The study looked at the reach of Pradhan Mantri Garib Kalyan Yojana via public distribution system (PDS) in Karnataka and Rajasthan to evaluate the policy response to the crisis.
    - It noted that around 30% of PDS priority ration cardholders did not get

the promised additional rations in these two states.

- **Abdication of responsibility by the Centre:** The Centre has abdicated all responsibility saying health is a state subject.
    - The Central government invoked the Disaster Management Act and it took decisions through committees on issues in which states had greater experience and better infrastructure.

**What is State of Working India 2021 report?**

- The report by the Azim Premji University reveals that workers came back to more precarious and informal forms of employment after the 2020 lockdown.

**Recommendations provided by the report**

- **Making up for the first wave and meeting the challenge of the second wave:** The fiscal support is urgently needed now for two reasons such as compensating for the losses sustained during the first year of the pandemic and offering a safety net for the months (or years) to come.
- **Strengthening PDS:** The extension of free rations under the PDS beyond June 2021 until the pandemic is brought under control.
- **Strengthening MGNREGA:** The expansion of MGNREGA entitlement to 150 days and revising programme wages upwards to state minimum wages.
- **Introducing Urban Employment Guarantee (UEG):** It is a national level, demand-driven, public works programme which provides a statutory right to employment at specified wage rates for a given number of days.
- **Introduction of National Employment Policy:** It will need to bring together various supply and demand side dimensions of the labour market and speak coherently to existing trade and industrial policy regimes.

## 1.5 RBI wants moderate bond yields

Recently, the Reserve Bank of India's decision to **step up purchase of government securities** under the **government securities acquisition programme (G-SAP)** led to the yield on the benchmark 10-year bond falling below 6%.

**Current movement of Bond Yields**

- The yield on the **10-year benchmark 5.85%, 2030 bond fell by 0.62%** and closed at 5.978%.
- The RBI under G-SAP has so far **bought Rs 25,000 crore worth of government securities** (G-secs).
- The **10-year bond has declined 15 basis points** from 6.15% in the last one month.
- The movements in yields, which depend on trends in interest rates, can **result in capital gains or losses for investors.**
    - It implies that if an **individual holds a bond carrying a yield of 6%**, a rise in bond yields in the market will bring the price of the bond down.
- **A drop in bond yield below 6% would benefit the investor** as the price of the bond will rise, generating capital gains.

**Reasons for softening of Bond Yields**

- The fall in bond yields in India could also be due to a **sharp decline in US Treasury yields** or the **economic uncertainty caused by Covid-19**.
- The announcement of a **bond-buying programme G-SAP played a crucial role** in turning the market sentiment.
- The RBI continued to send strong yield signals by **cancelling and devolving government debt auctions**.

**Impact of low bond yields on markets and investors**

- The experts say that the **structured purchase programme has calmed investors' nerves and reduced the spread** between the repo rate and the 10-year government bond yield.
- A decline in yield is also **better for the equity markets** because money starts flowing out of debt investments to equity investments.
    - It implies that as **bond yields go down, the equity markets tend to outperform by a bigger margin** and as bond yields go up equity markets tend to falter.
- It says the yield on **bonds is normally used as the risk-free rate** when calculating

the cost of capital.

    - It implies that **when bond yields go up**, **the cost of capital goes up**.
- When bond yields go up, it is a **signal that corporates will have to pay a higher interest cost on debt.**
- The **risk of bankruptcy and default also increases as debt servicing costs** go higher and this typically makes mid-cap and highly leveraged companies vulnerable.

**Why is the RBI keen on keeping yields in check?**

- The RBI has been aiming to **keep yields lower as that reduces borrowing costs** for the government while preventing any upward movement in lending rates in the market.
- A rise in bond yields **will put pressure on interest rates in the banking system** which will lead to a hike in lending rates.
    - The RBI wants to **keep interest rates steady** to kick-start investments.

## 1.6 Regulatory Review Authority (RRA 2.0)

Recently, the **Reserve Bank of India (RBI)** has said that an advisory group has been constituted to assist the second **Regulatory Review Authority (RRA 2.0).**

- In 1999, the RBI had set up a **Regulations Review Authority (RRA)** for **reviewing the regulations, circulars, reporting systems**, based on the feedback from the public, banks, and financial institutions.
- The recommendations of the RRA enabled **streamlining and increasing the effectiveness of several procedures** and simplifying regulatory prescriptions.
- It also paved the way for **issuance of master circulars and reduced reporting burden.**

**Regulatory Review Authority (RRA 2.0)**

- It was constituted by the **central bank of India** to **streamline regulations and reduce the compliance burden** of regulated entities.
- The RBI has set up the **second Regulatory Review Authority (RRA 2.0)**, initially

for a period of one year from May 01, 2021.

- The Reserve Bank of India **Deputy Governor M Rajeshwar Rao** has been appointed as the **head of the RRA 2.0.**

**Objectives of Regulatory Review Authority (RRA 2.0)**

- It aims to review the **regulatory prescriptions internally as well as by seeking suggestions from regulated entities** and other stakeholders on their simplification and ease of implementation.
- It will focus on **streamlining regulatory instructions and reducing the compliance burden** of regulated entities by simplifying procedures and reducing reporting requirements.
- It shall intend to **make regulatory and supervisory instructions more effective** by removing redundancies and duplication.
- It will look to **reduce the compliance burden on regulated entities** by streamlining the reporting mechanism, revoking obsolete instructions if necessary and obviating paper-based submission of returns wherever possible.
- It will also be tasked with **obtaining feedback from regulated ent**ities on simplification of procedures and enhancement of ease of compliance.
- It will examine and suggest the **changes required in the dissemination process** of RBI circulars and instructions.

**Advisory Group for RRA 2.0**

- It is headed by **SBI Managing Director S Janakiraman.**
- It will assist the RRA by **identifying regulations, guidelines, and returns that can be rationalised.**
- The advisory group represents the **members from regulated entities, including compliance officers, to support the RRA** in achieving the objective set forth in the terms of reference of RRA 2.0.

## 1.7 Post Devolution Revenue Deficit (PDRD) Grant

Recently, the Department of Expenditure has released the 2nd monthly installment of **Post Devolution Revenue Deficit (PDRD) Grant** of **Rs. 9,871 crore for the year 2021-22 to 17**

**States.**

- With the release of 2nd installment, a total amount of **Rs. 19,742 crore has been released in the first two months** of the current financial year as **Post Devolution Revenue Deficit Grant** to the states.
- The 15th Finance Commission has recommended **Post Devolution Release Deficit grants to 17 States.**
- The **States recommended for Post Devolution Revenue Deficit Grant** are Andhra Pradesh, Assam, Haryana, Himachal Pradesh, Karnataka, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand and West Bengal.

**Post Devolution Revenue Deficit (PDRD) Grant**

- The PDRD grants are released as per the **recommendations of the Finance Commission** in monthly installments to **meet the gap in Revenue Accounts of the States post devolution**.
- The eligibility of States to **receive this grant and the quantum of grant was decided by the Commission** based on the gap between assessment of revenue and expenditure of the State.
- The Finance Commission provides a **mechanism for compensation of any loss incurred by states**, which is called post-devolution revenue deficit grants.
- It forms the **second largest chunk of Finance Commission** transfers after the assistance to local rural bodies.

**Constitutional Provisions for RDRD Grant**

- The Centre provides the Post Devolution Revenue Deficit Grant to the States under**Article 275 of the Constitution.**
- A**rticle 275 provides for the payment of such sums as Parliament may by law** provide as grants-in aid to such States as Parliament may determine to be in need of assistance.

**Finance Commission Grants**

- The **73rd Constitutional Amendment** requires both the Centre and states to help Panchayati Raj institutions to evolve as a unit of self-governance by assigning them

funds, functions and functionaries.

- The Finance Commission Grants, in the Union Budget, provides **funds to local bodies, state disaster relief funds and compensates any revenue loss** to states after devolution of taxes.
- The Finance Commission Grants are primarily divided into **four sub-heads:**
    - **Grants for rural local bodies:** The three-tier model of governance envisioned in the Constitution assigns clear roles and responsibilities to Gram Panchayats.
        - The Finance Commission recommendations ensure that these local bodies are adequately funded.
    - **Grants for urban local bodies:** In addition to units of self-governance at the village level, the Constitution also envisages cities as units of self-governance.
        - The urban local bodies like municipal councils receive the largest chunk of Finance Commission Grants after Rural Local Bodies and Post Devolution Deficit Grants to states.
    - **Assistance to SDRF:** The central government also provides funds to State Disaster Relief Funds in addition to funding the National Disaster Management Authority (NDMA).
        - The assistance to state government's disaster relief authorities is provided as per the recommendations of the Finance Commission.
    - **Post devolution revenue deficit grants:** About a third of the total revenue collected by the Centre is directly transferred to states as their share in the divisible pool.

## 1.8 GST exemptions will make Covid supplies costlier

Recently, the Finance Minister has said that **GST exemption** on domestic supplies and commercial imports **"would make these items costlier"** for consumers.

**What are the taxes levied currently on these items?**

- At present, **5 per cent GST is levied** on **domestic supplies and commercial**

**imports** of vaccines.

- The **Covid drugs and oxygen concentrators** attract **12 per cent GST.**

**Demand from state government on GST exemption**

- The individuals and agencies, which are engaged in donation of Covid related drugs and equipments, have approached the state government to consider **exemption of these items from customs duty/ State GST (SGST)/ Central GST (CGST)/ Integrated GST (IGST).**
- The state government has requested that these items may be **exempted from GST/customs duty and other such duties and taxes** as the rate structure falls under the purview of the Central Government.
- It aims to help remove supply constraints of the above mentioned **life-saving drugs and equipment and contribute** towards effective management of Covid pandemic.

**Arguments from Central Government**

- The FM has argued that if **GST exemption is granted for domestic supplies and commercial imports** of Covid-related drugs, vaccines and oxygen concentrators:
    - The manufacturers would **not be able to offset the taxes paid on inputs** and pass it on to consumers in terms of higher prices.
- If full exemption from GST is given, **vaccine manufacturers would not be able to offset their input taxes** and would pass them on to the end consumer/citizen by increasing the price.
- A 5% GST rate ensures that the **manufacturer is able to utilise ITC (input tax credit)** and in case of overflow of ITC, claim refund.
- The central government has argued that the **exemption to vaccine from GST would be counterproductive** without benefiting the consumer.

**How much comes in from the levies and is shared?**

- If IGST of Rs 100 is collected on an item, **states and Centre get Rs 50 each as SGST and CGST**, respectively.
    - In addition, **41 per cent of the CGST revenue** is transferred to states as devolution.
- The Finance Minister said that **half the amount is earned by the Centre** and the

other half by the states on the GST revenues collected from sale of vaccines.

- Along with this, **41 per cent of Centre's collections also get devolved to the states**, resulting in almost 70 per cent of the total revenue collected from vaccines being given to states.

- The IGST exemption is **provided for all Covid relief material imported by the Indian Red Cross** for free distribution in the country.
- The goods which are **imported free of cost for free distribution** in the country by any entity, state government, relief agency or autonomous body is given the IGST exemption.
- The government has also provided **full exemption from basic customs duty and health cess** to their commercial imports.

## 1.9 Super Cycle of Commodities

Recently, there has been an across-the-board **rise in global commodity prices** that is being billed as a new **commodity super cycle.**

- A commodity is a **basic good used in commerce** that is **interchangeable** with other goods of the same type. Commodities are most often **used as inputs in the production of other goods or services.**
    - A commodity super cycle is a **sustained period of abnormally strong demand** growth that producers struggle to match, sparking an **increase in prices** that can **last years or in some cases a decade or more.**
- **Current Situation:**
    - **Metals:**
        - **Steel,** the most commonly used input in the construction sector and industries, **is at all-time highs, as most metals** including base and precious metals prices have increased a lot in the last one year.
    - **Agricultural Products:**
        - Sugar, corn, coffee, soybean oil, palm oil — **have risen sharply** in the US commodities market, the **effect of which is being seen in the domestic market, too.**

- **Reason:** The new commodity super cycle is resulting from:
    - **Recovery in global demand** (led by recovery in China and the US).
    - **Supply-side constraints.**
    - **Loose monetary policy of global central banks.**
    - **Investment in Asset Creation:** It is also a result of money starting to hide in assets that are stores of value as there is an expectation that inflation may rise.
        - Therefore it is fear of **inflation** that is leading to jump in prices and it is not demand driven.
- **Concerns:**
    - It is **leading to input cost pressures** and is a growing concern, as it is not only expected to have a bearing on cost of infrastructure development in India but also **have an impact on the overall inflation, economic recovery and policy making.**
    - Higher metal prices will lead **to higher Wholesale Price Index (WPI) inflation** and so the core inflation may not come down.

**Loose and Tight Monetary Policies**

- A monetary policy that **lowers interest rates and stimulates borrowing** is an **expansionary monetary policy or loose monetary policy.**
- Conversely, a monetary policy that **raises interest rates and reduces borrowing** in the economy is a **contractionary monetary policy or tight monetary policy.**

**Inflation**

- Inflation refers to the **rise in the prices of most goods and services** of daily or common use, such as food, clothing, housing, recreation, transport, consumer staples, etc.
- Inflation **measures the average price change** in a basket of commodities and services over time.
- Inflation is **indicative of the decrease in the purchasing power** of a unit of a country's currency. This could ultimately lead to a deceleration in economic growth.

- However, a **moderate level of inflation is required in the economy to ensure that production is promoted.**
- In India, inflation is primarily measured by two main indices — **WPI (Wholesale Price Index) and CPI (Consumer Price Index)** which measure wholesale and retail-level price changes, respectively.

**Core Inflation**

- It is the change in the costs of goods and services but **does not include those from the food and energy sectors.**This measure of inflation excludes these items **because their prices are much more volatile.**
- It is important because **it's used to determine the impact of rising prices on consumer income.**
- The decision makers **need to look at the mismatch** in supply and demand and they need to find out where to invest, where to **incentivise through the Production-Linked Incentive (PLI) Scheme to prepare themselves to deal with the situation.**

## 1.10 Sovereign Gold Bond Scheme 2021-22

Recently, the **Government of India**, in consultation with the **Reserve Bank of India**, has decided to issue **Sovereign Gold Bonds** for 2021-22.

**Sovereign Gold Bond Scheme**

- It is to be **issued by Reserve Bank of India** on behalf of the Government of India.
- The Bonds will be **denominated in multiples of gram(s) of gold** with a basic unit of 1 gram.
- The tenor of the Bond will be for a **period of 8 years with exit option after 5th year** to be exercised on the next interest payment dates.
- The **Gold Bonds** will be issued as **Government of India Stock under GS Act, 2006.**
- The investors will be **compensated at a fixed rate of 2.50 percent per annum** payable semi-annually on the nominal value.

- The interest on Gold Bonds shall be taxable as per the **provision of Income Tax Act, 1961 (43 of 1961)**.

**Selling of Sovereign Gold Bond Scheme**

- It will be sold through **Scheduled Commercial banks, Stock Holding Corporation of India Limited (SHCIL), designated post offices**, and **recognised stock exchanges.**
- The **Small Finance Banks** and **Payment Banks** are **excluded** from selling Sovereign Gold Bond Scheme.

**Eligibility under Sovereign Gold Bond Scheme**

- The Bonds will be **restricted for sale to resident individuals, HUFs, Trusts, Universities and Charitable Institutions.**
- The **minimum** permissible investment will be **1 gram of gold.**
- The **maximum limit** of subscription shall be **4 KG for individual, 4 Kg for HUF and 20 Kg for trusts** and similar entities per fiscal.
    - In case of **joint holding**, the **investment limit of 4 KG** will be applied to the first applicant only.
- The bonds acquired by the banks through the **process of invoking lien/hypothecation/pledge alone**, shall be counted towards Statutory Liquidity Ratio.

## 1.11 Housing Finance Companies (HFCs)

Over the last 18 months to 5 years, if bank customers have seen better transmission of rate cuts in their home loan rates on account of cut in marginal cost of lending rate (MCLR), the **HFC customers have had limited benefit** because of relatively smaller cuts in the prime lending rate (PLR).

**What is Housing Finance Companies (HFCs)?**

- It is a form of **non-banking financial company** which is engaged in the principal business of financing of acquisition or construction of houses.
- It is regulated by the **National Housing Bank.**
- It is under the direct supervision of the **Reserve Bank of India (RBI)** since August

2019.

- Any non-banking finance company can **operate as a housing finance company**, subject to the fulfillment of basic requirements as specified in the Companies Act, 1956.
- Under the Revised Framework, a HFC has been defined to mean a **non-banking financial company engaged in the housing finance business** and which fulfills the following conditions:
    - Its **financial assets** (in the business of providing finance for housing) constitute not less than 60% of its total assets; and
    - Out of the **total assets** (netted off by intangible assets), not less than 50% should be by way of housing financing for individuals.

**Impact of cut in repo rate on home loan customers**

- The cut in rates for existing customers depends on the **reduction in MCLR by banks and in PLR by HFCs** in response to a repo cut by RBI.
- The HFCs base their **lending rates on PLR** and offer a discount on it to customers.
- **An upward or downward revision in PLR** (in line with repo rate movement) impacts the lending rate of the existing customer.
- A cut in PLR is **reflected in the effective rate** for the customer within three months.
- For new customers, **banks could reduce their spread** over MCLR to offer an attractive rate.

**How do HFCs keep their rates competitive for new customers?**

- While there is a **large gap between banks and HFCs** when it comes to passing the benefit of a repo rate cut to existing borrowers, large HFCs compete with banks and offer similar rates to new customers.
- As HFC rates are **benchmarked to PLR**, they increase the discount on PLR for new customers.
- While both HFCs and banks offer the **facility of switching to rates being offered to new customers** after payment of conversion charge, a reduction in their PLR/MCLR would directly benefit borrowers.

## 1.12 Subsidy on Di-Ammonium Phosphate (DAP)

Recently, the central government has announced a **140% increase in the subsidy on di-ammonium phosphate (DAP)**, from Rs 511 to Rs 1,200 per 50-kg bag.

**Di-Ammonium Phosphate (DAP)**

- It is the **second most commonly used fertiliser** in India after urea.
- The farmers normally apply this fertiliser **just before or at the beginning of sowing**, as it is **high in phosphorus** that stimulates root development.
- It is the **preferred source of Phosphorous (P) for farmers** which is similar to urea, which is their preferred nitrogenous fertiliser containing 46% N.
- The inputs required to **produce one ton of DAP fertilizer** are approximately **1.5 to 2 tons of phosphate rock, 0.4 tons of sulfur (S)** to dissolve the rock, and **0.2 tons of ammonia.**
- DAP also acts as a **fire retardant.**

**Importance of DAP in farming**

- Its relatively **high nutrient content and excellent physical properties** make it a popular choice in farming and other industries.
- The high nutrient content of DAP helps **reduce handling, freight and application costs**.
- It is an **excellent source of P and nitrogen (N)** for plant nutrition.
- The ammonium present in DAP is an **excellent N source** and will be **gradually converted to nitrate by soil bacteria**, resulting in a subsequent drop in pH.

## 1.13 Kharif Strategy 2021

Recently, the Ministry of Agriculture & Farmers Welfare has announced the **Kharif Strategy 2021**.

**Key Highlights of Kharif Strategy 2021**

- It will bring an **additional 6.37 lakh hectare area under oilseeds** and is likely

to **produce 120.26 lakh quintals of oilseeds and edible oil** amounting to 24.36 lakh quintals.

- The **area and productivity enhancement has been formulated for soybean and groundnut** with a focus on high yielding varieties of seeds to be provided free of cost under the National Food Security Mission (Oil Seeds and Oil Palm) Mission.
- **Distribution of soybean seeds for intercropping for 41 districts in the 6 states** of Madhya Pradesh, Maharashtra, Rajasthan, Gujarat, Karnataka, Telangana and Chhattisgarh costing Rs76.03 crore and covering 1,47,500 ha.
- **Distribution of soybean seeds for high potential districts in 73 districts of the 8 states** of Madhya Pradesh, Maharashtra, Rajasthan, Telangana, Karnataka, UP, Chhattisgarh and Gujarat costing Rs 104 crore and 3,90,000 ha.
- **Distribution of mini kits in 90 districts of the 9 states** of Madhya Pradesh, Maharashtra, Rajasthan, Karnataka, Telangana Chhattisgarh, Gujarat, UP and Bihar costing Rs 40 crore.
    - The area to be covered will be 1,006,636 ha and the number of mini-kits will be 8,16,435.
- The **soybean seeds to be distributed will be having a yield of not less than 20 Qtl/ha**.
    - The distribution of **seeds for intercropping and high potential districts** will be through the state seed agencies and the seeds for the mini-kits will be through the Central seed producing agencies.
- **Distribution of 74,000 Groundnut seed mini kits** in the 7 states of Gujarat, AP, Rajasthan, Karnataka, Maharashtra, Madhya Pradesh and Tamil Nadu covering costing Rs 13.03 crore for seeds not less than 22 Qtl/ha.

**Significance of Kharif Strategy 2021**

- It is a multi-pronged strategy to **achieve self-sufficiency** in the production of oilseeds.
- It is an ambitious plan for the **free distribution of high yielding varieties of seeds** to the farmers for the Kharif season 2021.
- It will put **emphasis on enhancing the productivity of oilseeds** by increasing the availability of high yielding varieties of seeds for the farmers to use on their fields.

- It is a **detailed plan for both area expansion and productivity enhancement** for Tur, Moong and Urad.

**National Mission on Oilseeds and Oil Palm**

- The Mission has two submissions i.e. **Mini Mission I of Oil Seeds** & **Mini Mission II of Oil Palm**.
- Its main objective is to **increase the production and productivity** of oil crops.
- The MM I includes **conventional oil seeds crops like Rape & Mustard, Sesamum, Ground nut**, etc. while MM II includes **Oil Palm.**
- It has the objective to **augment the availability of edible oils and reduce the import of edible oils** by increasing the production and productivity of oilseeds and oil palm.
- It is a **multi-pronged mission** which includes:
    - Increasing the seed replacement ratio with focus on varietal replacement;
    - Increasing irrigation coverage;
    - Nutrient management;
    - Intercropping with cereals/pulses/sugarcane;
    - Productivity improvement and adoption of proven and climate-resilient technologies; and
    - Area expansion through diversification of low yielding food grains

## 1.14 Forex reserves set to breach all-time high

According to data from the Reserve Bank of India (RBI), the **country's foreign exchange reserves have swelled** by $563 million to $590.028 billion.

**Reasons for increase in forex reserves**

- It is driven by **sustained foreign direct investment (FDI)** and **foreign portfolio investor (FPI) inflow.**
- The rise in the forex kitty was mainly on account of an **increase in foreign currency assets (FCA)** which is a major component of the overall reserves.

- The RBI released the data that the **FCAs jumped by $377 billion to $546.87 billion** in the reporting week.

- The foreign currency assets include the **effect of appreciation or depreciation of non-US currencies** like the euro, British pound and Japanese yen held in the foreign exchange reserves.
- The **gold reserves recorded a rise** of $174 million to $36.654 billion.
- The **special drawing rights (SDRs)** with the International Monetary Fund (IMF) posted a gain of $2 million to $1.506 billion.

**Implication of India's rising forex reserves**

- India's reserve **position with the IMF has increased** by $10 million to $4.999 billion in the reporting week.
- The rising forex reserves could bring some **comfort to the government as well as the Reserve Bank** in managing the nation's external and internal financial issues.
- It is a big cushion in the event of any crisis on the economic front and enough to **cover India's import bill** for a year.
- An increase in the forex kitty could also help **strengthen the rupee against the US dollar.**
- It provides a level of confidence to markets that a country can **meet its external obligations.**
- It demonstrates the **backing of domestic currency by external assets**.
- It assists the government in **meeting its foreign exchange needs and external debt obligations** and maintains a reserve for national disasters or emergencies.

**Role of Reserve Bank of India in management of Forex Reserves**

- The adequate forex reserves should provide **room for the RBI to cut rates and support recovery.**
- The Reserve Bank functions as the **custodian and manager of forex reserves** and operates within the overall policy framework.
- The RBI uses its forex kitty for the **orderly movement of the rupee**.
- The **RBI sells the dollar when the rupee weakens** and buys the dollar when the

rupee strengthens.

**Foreign Exchange Reserve**

- They are assets such as **foreign currencies, gold reserves, treasury bills, etc.** retained by a central bank that checks the balance payments and influences the foreign exchange rate of its currency.
- The International Monetary Fund **defines reserves as external assets** that are readily available to and controlled by monetary authorities for:
    - **Direct financing** of external payments imbalances; and
    - **Indirectly regulating** the magnitudes of such imbalances through intervention in exchange markets to affect the currency exchange rate, and/or for other purposes
- The Reserve Bank of India (RBI) acts as the **custodian of foreign reserves, and manage reserves.**
- It consists of **cash, gold, bonds, bank deposits and financial assets** denominated in foreign currencies.

**Purpose of the Foreign Exchange Reserve**

- The most significant objective behind this is to **ensure that RBI has backup funds if their national currency rapidly devalues** or becomes altogether insolvent.
- If the value of the Rupee decreases due to an increase in demand of the foreign currency then RBI sells the dollar in the Indian money market so that **depreciation of the Indian currency can be checked.**
- A country with a good stock of forex has a **good image at the international level** because the trading countries can be sure about their payments.
- A good forex reserve helps in **attracting foreign trade and earns a good reputation** in trading partners.

## 1.15 Supreme Court ruling on creditors invoking personal guarantees

Recently, the Supreme Court has ruled that **creditors can proceed against promoters of defaulting companies** to recover debt if such promoters have given personal guarantees to

secure funds.

**Supreme Court's ruling on personal insolvency under IBC**

- The SC has said is that mere **approval of a resolution plan for a debt-laden company** does not automatically discharge a promoter from their liability in lieu of the personal guarantee they had given to secure the funding for the company.
- The **personal guarantees from promoters** are a kind of assurance to lenders that the monies being borrowed will be returned.
- The apex court has said that under the contract of guarantee, the **liability of the promoter will be over and above the liabilities of the company**.

**Personal guarantee**

- A personal guarantee is most likely to be **furnished by a promoter or promoter entity** when the banks demand for collateral which equals the risk they are taking by lending to the firm, which may not be doing so well.
- It is different from the collateral that **firms give to banks to take loans**, as Indian corporate laws say that individuals such as promoters are different from businesses and the two are very separate entities.
- A personal guarantee is an **assurance from the promoters or promoter group** that if the lender allows them the fund, they will be able to turn around the loss-making unit and repay the said loan on time.

**Arguments given by government**

- **Bad loans have been a major problem for banks and financial creditors** over the past decade and the promoters had been able to secure funds from banks without the due diligence in most cases.
- The government had introduced the provision which gave banks the **power to move application for initiation of insolvency against personal guarantors** to corporate debtors.
- The finance ministry nudged banks to also **pursue personal insolvency cases against promoters** who had furnished personal guarantees for the loans taken by their firms.

## 1.16 Ecological Tax Reform

The Indian government announced a **pandemic related stimulus package** in FY 202021 though there was large decline in tax revenue.

- The COVID-19 pandemic has also **forced countries all over the world** to rethink climate change and the need for preservation of the environment.
- The fiscal reforms for **managing the environment are important**, and India has great potential for revenue generation in this aspect.

**Ecological Tax Reform**

- The **environmental tax reforms** generally involve three complementary activities:
    - **Eliminating existing subsidies and taxes** that have a harmful impact on the environment;
    - **Restructuring existing taxes** in an environmentally supportive manner; and
    - **Initiating new environmental taxes**
- The taxes can be designed either as **revenue neutral or revenue augmenting.**
- The **additional revenue can either be targeted** towards the provision of environmental public goods or directed towards the overall revenue pool.
- In India, **eco taxes** can target three main areas:
    - **Differential taxation on vehicles** in the transport sector purely oriented towards fuel efficiency and GPS based congestion charges;
    - In the **energy sector by taxing fuels** which feed into energy generation; and
    - **Waste generation** and use of natural resources

**Fixation of Eco Tax Rate**

- The success of an ecological tax in **India would depend on its architecture**, that is, how well it is planned and designed.
- The eco tax rate ought to be **equal to the marginal social cost arising** from the negative externalities associated with the production, consumption or disposal of

goods and services.

- It requires an evaluation of the **damage to the environment based on scientific assessments** which would include the adverse impacts on the health of people, climate change, etc.

**Benefits of Eco Tax Rate**

- The implementation of an **environmental tax in India** will have three broad benefits i.e. **fiscal, environmental** and **poverty reduction.**
- The environmental tax reforms can **mobilise revenues to finance basic public services** when raising revenue through other sources proves to be difficult or burdensome.
- The **revenue from environmental tax reforms** can also be used to reduce other distorting taxes such as fiscal dividend.
- The environmental tax reforms help **internalize the externalities**, and the said revenue can finance research and the development of new technologies.

## 1.17 Proposals for Initial Public Offerings (IPO)

Recently, five companies filed their draft red herring prospectus (DRHP) for an **initial public offering (IPO)** with the **Securities and Exchange Board of India (SEBI).**

- In 2020-21, as many as 69 companies raised close to Rs 75,000 crore through public issues, including IPOs.

**Reasons for rush in Initial Public Offerings (IPO)**

- The sudden surge in the number of prospectus filings with SEBI to list and raise funds from the equity market comes on the back of **strengthening benchmark indices.**
    - **A good earning season, liquidity in the market, a decline in coronavirus cases** and hopes of an **uptick in vaccination** and **opening up of the economy** are leading to a rise in benchmark indices.
- The experts say that companies and their merchant bankers are looking to **capitalise on the excess liquidity in the market, the rise in indices and good investor sentiment.**

- A bull market offers a **high probability of listing gains**, which is not only a big draw for many IPO investors but also leads to companies launching their issues.
- A strong market means that a **good company can command a higher valuation** for its shares than in a subdued market environment.
- The market regulator SEBI has **fine-tuned the primary market norms**, enabling issuers to float IPOs and list their shares in a short period.

**Significance of money raised through an IPO**

- The equity on offer from a large number of companies is a **mix of some fresh equity and mostly offer for sale (OFS)** by existing investors or promoters.
- The market participants say that an I**PO is a good way for providing an exit to existing private equity** and venture capital investors who would have supported the company during the initial years of its growth.
- The **money raised** by offering **fresh equity** in an IPO **goes to the company** for its expansion and growth but the **money raised through OFS goes to the investor** offering his equity for sale.

**Why should investors be cautious?**

- It is important to take a **careful look at the company, its promoter, its management and financials** before making an investment.
- A **good peer review is a must** and investors should compare their growth and PE multiple (ratio of market price to earnings per share) before taking a call.
- The retail investors should instead look for **fundamentally strong companies** in high-growth sectors that have a proven track record.
- The experts say that **promoters and merchant bankers nowadays don't leave anything on the table** for retail investors as they go for the maximum possible valuation.
- An investor must be cautious in such situations i.e. **discounting future growth** and **showing a rapid increase in prices.**
    - The investor should invest in **fundamentally strong stocks** rather than trying to make quick money only through listing gains in any and every IPO.

## 1.18 43rd GST Council meet

Recently, the Union finance minister Nirmala Sitharaman chaired the **Goods and Services Tax (GST) Council meeting** after a gap of seven months.

**Key Highlights of 43rd GST Council Meeting**

- The council has decided to **exempt import of relief items** and is being extended till October 31, 2021.
- The Council decided to keep the **GST rate of 5%** as it is on COVID vaccines.
- The **import of medicine for black fungus**, that is Amphotericin B, has also been included in the **exempted category.**
- The **import of Covid-related relief items**, even if purchased or meant for donating to government or to any relief agency upon recommendation of state authority, to be **exempted from IGST till August 31, 2021.**
- **Amnesty scheme:** To provide relief to small taxpayers, an Amnesty scheme has been recommended for reducing late fee payable by mall taxpayers & medium-sized taxpayers.
    - The Amnesty Scheme is recommended to benefit 89% GST Taxpayers.
    - The rationalization of Late fee for Small Taxpayers to be applicable to future liabilities.
    - The taxpayers can now file their pending returns and avail the benefits of this Amnesty scheme with reduced late fees.
    - The maximum amount of late fee has been also reduced and will come into effect from future tax periods.
- **Annual Return Filings under GST:** The Annual Return filing will continue to be optional for FY 2020-21 for small taxpayers, having a turnover less than Rs 2 crores while reconciliation statements for 2020-21 will be furnished only by those taxpayers whose turnover is Rs 5 crores or more.
- **Session on Compensation cess:** A special session dedicated to compensation cess collection beyond July 2022 will be convened.
    - The centre to borrow Rs 1.58 lakh crore to meet states' compensation demand this fiscal.

- **New rates in exemptions:** Group of ministers to be formed quickly, who will examine need for further reductions & decide on any new rates in exemptions and will submit the report on reduction of rates on COVID-related items by June 8, 2021.

**GST Council**

- It is a **constitutional body** for making recommendations to the Union and State Government on issues related to Goods and Service Tax.
- It is **chaired by the Union Finance Minister** and other members are the Union State Minister of Revenue or Finance and Ministers in-charge of Finance or Taxation of all the States.
- As per **Article 279A (1)** of the amended Constitution, the GST Council has to be constituted by the President within 60 days of the commencement of Article 279A.
- As pe**r Article 279A** of the amended Constitution, the GST Council which will be a joint forum of the Centre and the States, shall consist of the following members:
    - the Union Finance Minister as Chairperson;
    - the Union Minister of State in charge of Revenue or Finance as a Member;
    - the Minister in charge of Finance or Taxation or any other Minister nominated by each State Government as Members.
- As per **Article 279A (4)**, the Council will make recommendations to the Union and the States on important issues related to GST.

**GST Compensation Cess**

- All taxpayers who are engaged in the **supply of selected goods or services other than composition taxpayers** will collect compensation cess.
- The compensation cess is **levied over and above the amount of GST charged** in relation to a particular supply.
- The calculation is similar to that of GST i.e. the **prescribed rate is applied to the transaction value given under section 15 of the CGST Act 2017** to arrive at the cess liability.

## INDIA AND WORLD

### 2.1 P-8I Patrol Aircraft

Recently, the Biden Administration has notified the Congress of its **determination to sell six P-8I patrol aircraft to India** for an estimated cost of USD 2.42 billion.

- The Indian Navy had **procured eight P-8I aircraft from Boeing in January 200**9 via direct commercial sale and contracted for an additional four aircraft in July 2016.
- The **first P-8I aircraft were delivered to the Indian Navy in 2013**, providing critical capabilities to coalition maritime operations.

**Key Highlights**

- The proposed sale will **support the foreign policy and national security of the United States** by helping strengthen the **US-Indian strategic relationship.**
- It will improve the security of a major defensive partner, which continues to be an important force for **political stability, peace and economic progress in the Indo-Pacific and South Asia region.**

**P-8I Patrol Aircraft**

- It is a **long-range, multi-mission maritime patrol aircraft** offered by Boeing for the **Indian Navy.**
    - It replaced the ageing fleet of the **Indian Navy's Tupolev Tu-142 aircraft.**
- The P-8I aircraft is a **variant of the P-8A Poseidon multi-mission maritime aircraft (MMA)** operated by the US Navy.
- The aircraft is equipped with a **CAE AN/ASQ-508A magnetic anomaly detection (MAD) system, APS-143C (V) 3 multimode radar** and a global version of the **Raytheon APY-10 surveillance radar.**
    - The APY-10 radar provides **precise information in all-weather, day and night missions.**
- The P-8I aircraft can fly at a **maximum speed of 789km/h** and can **reach a maximum altitude of 12,496m.**

**Significance of P-8I Patrol Aircraft for India**

- It will allow the Indian Navy to **expand its maritime surveillance aircraft (MSA) capability** for the next 30 years.
- India will have **no difficulty absorbing these aircraft into its armed forces.**
- The proposed sale of this equipment and support will **not alter the basic military balance in the region.**
- It can conduct **anti-submarine warfare (ASW), anti-surface warfare (AsuW), intelligence, maritime patrol, and surveillance and reconnaissance missions.**
- It provides **India's maritime warriors a significant edge** in the strategically important Indian Ocean region.

## 2.2 US puts India on Priority Watch List under Special 301 Report

Recently, the United States has released its **Special 301 Report for IP protection and enforcement**.

**Key Highlight of Special 301 Report**

- The office of the USTR reviewed more than **100 trading partners** for this year's **"Special 301 Report"**, and **eight on Priority Watch List** and **23 on the Watch List.**
- It placed **India and eight other countries** on the **Priority Watch List** for IP protection and enforcement.
    - The other countries that have been put on the list are **Argentina, Chile, China, Indonesia, Russia, Saudi Arabia, Ukraine and Venezuela.**
    - The countries will be the subject of **intense bilateral engagement** during the coming year.
- India's enforcement of IP in the online sphere has gradually improved but a **lack of concrete benefits for innovators and creators persists**, which continues to undermine their efforts.
- The report highlighted that **India remains one of the world's most challenging major economies** with respect to protection and enforcement of IP.

- The **23 trading partners** on the Watch List are
    - Algeria, Barbados, Bolivia, Brazil, Canada, Colombia, Dominican Republic, Ecuador, Egypt, Guatemala, Kuwait, Lebanon, Mexico, Pakistan, Paraguay, Peru, Romania, Thailand, Trinidad & Tobago, Turkey, Turkmenistan, Uzbekistan, and Vietnam.

**Special 301 Report**

- The **Office of the United States Trade Representative (USTR)** is responsible for the preparation of Special 301 Report.
- It is the **result of an annual review of the state of intellectual property (IP) protection and enforcement** in U.S. trading partners around the world.
- USTR conducts this **review pursuant to Section 182 of the Trade Act of 1974**, as amended by the Omnibus Trade and Competitiveness Act of 1988 and the Uruguay Round Agreements Act.
- It reflects the **outcome of a Congressionally-mandated annual review** of the global state of intellectual property (IP) rights protection and enforcement.
- The review **reflects the Administration's resolve to encourage and maintain enabling environments for innovation**, including effective IP protection and enforcement, in markets.
- The Report identifies a **wide range of concerns** that limit innovation and investment, including:
    - The deterioration in the effectiveness of IP protection and enforcement and overall market access for persons relying on IP in a number of trading partner markets;
    - Reported inadequacies in trade secret protection in countries around the world, as well as an increasing incidence of trade secret misappropriation;
    - Troubling "indigenous innovation" policies that may unfairly disadvantage U.S. rights holders in foreign markets;
    - The continuing challenges of copyright piracy and the sale of counterfeit trademarked products on the Internet;
    - Additional market access barriers, including nontransparent, discriminatory or otherwise trade-restrictive, measures that appear to

impede access to healthcare and copyright-protected content; and

- Ongoing, systemic IP enforcement issues at borders and in many trading partner markets around the world.

## 2.3 Operation Samudra Setu II

Recently, the Ministry of Defence has announced the launch of **Operation Samudra Setu II.**

**Composition of Dry Air**

| Element | Symbol | % of Total, Note 1 |
|---|---|---|
| Nitrogen | N | 78.0840000% |
| Oxygen | O | 20.9476000% |
| Argon | Ar | 0.9340000% |
| Carbon Dioxide | $CO_2$ | 0.0314000% |
| Neon | Ne | 0.0018180% |
| Methane | CH | 0.0002000% |
| Helium | He | 0.0005240% |
| Krypton | Kr | 0.0001140% |
| Hydrogen | H | 0.0000500% |
| Xenon | Xe | 0.0000087% |
| Ozone | O | 0.0000070% |
| Nitrogen Dioxide | NO | 0.0000020% |
| Iodine | I | 0.0000010% |
| Carbon Monoxide | CO | Trace |
| Ammonia | NH | Trace |

Notes

1. These are perectages by volume at sea level pressure and 59°F
2. From the CRC Handbook of Chemistry and Physics, 1997
3. Air can contain as much as 5% water vapor (more typically, 1-3%). At 1-5%, it becomes the third most common constituent of air, which changes the other percentages accordingly.

### Operation Samudra Setu II

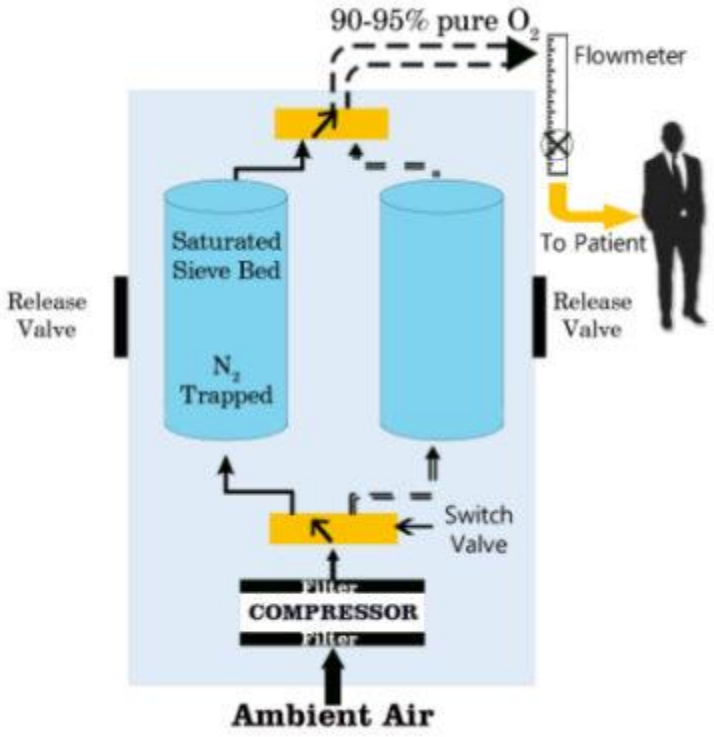
- It is launched by **Indian Navy** as part of Indian's fight against coronavirus pandemic.
- The Indian Naval ships such as **Kolkata, Kochi, Talwar, Tabar, Trikand, Jalashwa and Airavat** have been deployed under the operation.
- The operation is carried out for **shipment of liquid medical oxygen-filled cryogenic containers** and associated medical equipment from various countries.
- **INS Kolkata and INS Talwar**, mission deployed in Persian Gulf, were the first batch of ships that were immediately diverted for the task and entered port of Manama, Bahrain.
- **INS Talwar,** with 40 MT Liquid Medical Oxygen (LMO) embarked, is headed

back home.

- **INS Kolkata** has proceeded to Doha, Qatar for embarking medical supplies and will subsequently head to Kuwait for embarking Liquid Oxygen tanks.
- **INS Airavat** is scheduled to enter Singapore for embarking Liquid oxygen tanks and INS Jalashwa is standing by in the region to embark medical stores at short notice.
- The second batch of ships comprising **Kochi, Trikand and Tabar** mission deployed in Arabian sea have also been diverted to join the national effort.

**Liquid Medical Oxygen**

- Medical Liquid Oxygen is **supplied and stored as a liquid at very low temperature**s, in vessels and storage tanks.
- It is **converted to Medical Oxygen**, a gas at normal temperatures, for the patient to breathe when required.




- The **Medical Oxygen is used**:
    - during anaesthesia and for recovery following surgery;

- to treat or prevent oxygen deficiency in the body in many different situations such as:
    - surgery or major trauma such as a road traffic accident
    - heart attacks
    - severe blood loss
    - carbon monoxide poisoning
    - severe lung and heart conditions
    - very high fevers
- for resuscitation of adults, children and babies.

- If this **gas or liquid comes in contact with the skin** it will cause cold burns.
- The Medical Liquid Oxygen is only given to a patient after it has been **converted into Medical Oxygen at room temperature**.

## 2.4 India-UK Virtual Summit: Comprehensive Strategic Partnership

Recently, a **Comprehensive Strategic Partnership** was adopted at the virtual summit held between **India and United Kingdom.**

- India and the UK enjoy **long standing friendly ties and share a Strategic Partnership**underpinned by mutual commitment to democracy, fundamental freedoms and the rule of law.
- An ambitious **'Roadmap 2030'** was adopted at the Summit to elevate bilateral ties to a **'Comprehensive Strategic Partnership'.**
- The two leaders **discussed the Covid19 situation and ongoing cooperation** in the fight against the pandemic, including the successful partnership on vaccines.
- The two Prime Ministers launched an **'Enhanced Trade Partnership (ETP)'** to unleash the trade potential between the 5th and 6th largest economies of the world.
- Both sides agreed to **enhance cooperation on new and emerging technologies**, including Digital and ICT products, and work on supply chain resilience.
- Both Prime Ministers also **exchanged views on regional and global issues** of mutual interest, including cooperation in the Indo-Pacific, and G7.

- India and the UK launched a **comprehensive partnership on migration and mobility**that will facilitate greater opportunities for the mobility of students and professionals between the two countries.
- India lifted restrictions to enable British fruit producers to export their produce to the country and improved access to medical devices through the acceptance of the **"UK Certificates of Free Sale".**

**Significance of India-UK Virtual Summit**

- The Roadmap will pave the way for a **deeper and stronger engagement over the next ten years** in the key areas of people to people contacts, trade and economy, defence and security, climate action and health.
- As part of the ETP, India and the UK agreed on a **roadmap to negotiate a comprehensive and balanced FTA**, including consideration of an Interim Trade Agreement for delivering early gains.
- The enhanced trade partnership between India and UK will generate **several thousands of direct and indirect jobs** in both the countries.
    - The UK is **India's second largest partner** in research and innovation collaborations.
- A new India-UK **'Global Innovation Partnership'** was announced that aims to **support the transfer of inclusive Indian innovations** to select developing countries, starting with Africa.
- The Enhanced Trade Partnership will see **Britain open up its fisheries sector to more Indian players**, facilitate more opportunities for nurses, recognise Indian seafarers' certificates and enter into a joint dialogue on a social security agreement.

**Opportunity under 2030 Vision**

- **Connecting our countries and people:** It will enhance high level & ministerial contacts to further improve bilateral institutional mechanisms for an in-depth exchange of views on bilateral, regional and global issues with focus on the Commonwealth countries.
    - It will promote and uphold a ru**les-based international system and work together** to promote reformed multilateralism to make international organizations more effective in addressing current global challenges.

- It is important to promote **Track 1.5 and Track 2 Dialogues** between our think tanks and academic institutions on various aspects of our strategic relations.
- It will enhance India-UK engagement within the **Indian Ocean Rim Association (IORA) framework** as UK is a Dialogue Partner in IORA.

- **Migration and mobility:** The UK commits to a joint dialogue with India, including relevant stakeholder participation, for mutual exchanges and sharing of information concerning the possibility of signing a Social Security Agreement.
  - Enhance cooperation under the **bilateral Extradition and Mutual Legal Assistance Treaties** to facilitate speedy conclusion of extradition requests from both sides.
- **Consular cooperation:** Strengthen the India-UK Consular Dialogue to promote closer cooperation in consular matters and to resolve long-running or complex consular cases.
  - Establish a working mechanism on cooperation in consular crises, including consular crises in third countries and on best practice for crisis preparedness and crisis management.
- **Education, research and innovation and enterprise:** Enhance development of direct linkages and partnerships between higher educational institutions of both the countries.

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## 2.5 Intellectual property waiver for Covid-19 vaccines

Recently, the United States has announced support for **waiving intellectual property protection** for Covid-19 vaccines.

- In October 2020, **India and South Africa** had asked the WTO to waive certain conditions of the **Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement** that could impede timely access to affordable medical products to combat Covid-19.
- The countries had asked the **TRIPS Council to recommend a waiver on the implementation, application and enforcement** of four sections in the second part of the agreement.
  - These sections 1, 4, 5, and 7 pertain to **copyright and related rights, industrial designs, patents, and the protection of undisclosed**

**information.**

- The proposal had said that **developing countries "especially", may face institutional and legal difficulties** when using flexibilities available in the TRIPS Agreement.

**Key Highlights**

- The US will pursue **"text-based negotiations"** on the waiver at the World Trade Organization (WTO).
    - The text-based negotiations involve **negotiators exchanging texts with their preferred wording** and then thrashing out a consensus on the working.
- **All 164 WTO members must agree** on the draft, and any one member can veto it.

**Meaning of intellectual property waiver for Covid-19 vaccines**

- The IP waiver might **open up space for production of Covid vaccines** with emergency use authorisations (EUA).
- **Most production is currently concentrated in high-income countries** and production by middle-income countries has been happening through licensing or technology transfer agreements.
- The US support for an IP waiver stems from a **proposal by India and South Africa in the WTO** last year.
    - The proposal had called for a **waiver on all Covid interventions**, including testing diagnostics and novel therapeutics.
- The countries including **Canada, South Korea, and Bangladesh have shown interest**in making Covid vaccines if they can get a patent waiver.

**What are the deterrents for the waiver?**

- The pharma companies including **Pfizer and AstraZeneca had opposed the proposed waiver saying eliminating IP protections** would undermine the global response to the pandemic.
- It could **create confusion that could potentially undermine public confidence** in vaccine safety and create a barrier to information sharing.
- The argument that these **countries do not have the capacity to speedily produce**

**vaccines goes against earlier moves** towards a patents regime for generic drugs.

**What are patents and IP rights?**

- A patent represents a **powerful intellectual property right.**
    - It is an **exclusive monopoly granted by a government to an inventor** for a limited, pre-specified time.
- It provides an **enforceable legal right** to prevent others from copying the invention.
- The patents can be either **process patents or product patents.**
    - **A product patent** ensures that the rights to the final product are protected, and anyone other than the patent holder can be restrained from manufacturing it during a specified period.
    - **A process patent** enables any person other than the patent holder to manufacture the patented product by modifying certain processes in the manufacturing exercise.
- **India moved from product patenting to process patenting** in the 1970s, which enabled India to become a significant producer of generic drugs at global scale.

**Reasons for demand to waive patents on Covid vaccines**

- At present, **only drug companies which own patents are authorised** to manufacture Covid vaccines.
- The lifting of patent will **allow the recipes to be shared** and there will no longer be an embargo.
- Any company which possesses the **required technology and infrastructure can produce vaccines** after waiver of patent.
    - It will **lead to cheaper and more generic versions** of Covid vaccines.
    - It will also mean two things that **vaccines will be more affordable** and this will be a **big step in overcoming vaccine shortage**.
- The inequitable distribution of vaccines has opened up a **glaring gap between developing and wealthier countries.**

**Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement**

- It is the most **comprehensive multilateral agreement** on intellectual property (IP).
- It came into effect on **1 January 1995.**
- It is to date the **most comprehensive multilateral agreement** on intellectual property.
- It plays a **central role in facilitating trade in knowledge and creativity**, in resolving trade disputes over IP, and in assuring WTO members the latitude to achieve their domestic policy objectives.
- It frames the IP system in terms of **innovation, technology transfer and public welfare.**
- The Agreement is a **legal recognition of the significance of links between IP and trade** and the need for a balanced IP system.
- It is a **minimum standards agreement**, which allows Members to provide more extensive protection of intellectual property if they so wish.

## 2.6 India participates in the 3rd Arctic Science Ministerial (ASM3)

Recently, the Ministry of Earth Science has participated in the **3rd Arctic Science Ministerial (ASM3).**

**Arctic Science Ministerial (ASM)**

- It is the **global platform** for discussing research and cooperation in the **Arctic region.**
- The first two meetings i.e. **ASM1 and ASM2** were held in the **USA in 2016** and**Germany in 2018**, respectively.
- It promotes collaborations towards **strengthening observational systems** and sharing of data to enhance knowledge.

**Key Highlights of Third Arctic Science Ministerial (ASM3)**

- The ASM3 is jointly organised by **Iceland and Japan.**
- It is the **first Ministerial meeting** being held in Asia.
- The theme for this year is **'Knowledge for a Sustainable Arctic'**.

- It aims to use the well-established foundation of the Ministerial as a means to take **action on coordinated Arctic observing and research** in an open and transparent format which includes all Arctic stakeholders.
    - The platform aims to **emphasize and engage in constant monitoring**, and strengthen observations.
- A vital element of ASM3 is the **development of education and capacity building** for future generations, with an emphasis on both scientific and local knowledge in Arctic and non-Arctic States.

**India's role in Arctic Region**

- India would continue to play a positive role in **deepening shared understanding of the Arctic** through observation, research, capacity building, as well in promoting sustainable development of the region through international cooperation
- India would deploy **open ocean mooring in the Arctic** for long-term monitoring of upper ocean variables and marine meteorological parameters.
- The launch of **NISER (NASA-ISRO Synthetic Aperture Radar) satellite mission**, in collaboration with the USA, is underway.
    - NISER aims to conduct **global measurements of the cause and consequences of land surface changes** using advanced radar imaging.
- India has a permanent research station in the Arctic called **Himadari at NyAlesund, Svalbard Area in Norway.**
- It has also deployed a **multi-sensor moored observatory called IndARC in the Kongsfjorden fjord** since July 2014.
- The research in the Arctic region from India is coordinated, conducted, and promoted by the **National Centre for Polar and Ocean Research (NCPOR), Goa**, under the Ministry of Earth Sciences.

**Arctic Council**

- India enjoys **'Observer' status** in the **Arctic Council** with twelve other countries since 2013.
    - The **12 countries** are Japan, China, France, Germany, UK, Italy, Switzerland, Poland, Spain, Netherlands, Singapore, and South Korea.

- It is a **high-level intergovernmental forum** to promote cooperation, coordination, and interaction towards sustainable development and environmental protection in the Arctic.
- It was formally established in **1996.**
- The **Ottawa Declaration** defines these states such as **Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and United States** as Members of the Arctic Council.

## 2.7 WHO declares India variant as a global variant of concern

Recently, the **World Health Organization (WHO)** has classified a coronavirus variant which was first identified in India as a **"global variant of concern"**.

**India variant of coronavirus**

- The variant called **B.1.617** was classified as a **variant under investigation (VUI)** by authorities in the UK.
- The Indian government said that this variant also called the **"double mutant variant"**could be linked to a surge in the cases of coronavirus seen in some states.
- The B.1.617 variant of SARS-CoV-2 carries two mutations, **E484Q and L452R.**
- The two mutations are found in the **virus's spike protein**.
    - The spike protein **helps the virus to bind itself to the human cell's receptors** and gain entry into a host cell.
- The **E484Q mutation** is similar to **E484K**, a mutation found in the **United Kingdom (lineage B.1.1.7) and South Africa (B.1.351) variants** of the coronavirus.
- The **L452R mutation** has been found in fast spreading variants in **California (B.1.427 and B.1.429).**
    - It can **increase the binding power of spike proteins** with ACE2 receptors on human cells, making it more transmissible.
- It has already **spread to more than 17 countries** and several countries have put travel restrictions for passengers coming from India as a result of the surge in cases

here.

**WHO define a variant of concern**

- The WHO says that a **variant of interest (VOI) becomes a variant of concern (VOC)** if it has been demonstrated to be associated with **increase in transmissibility or detrimental change** in COVID-19 epidemiology.
- The **increase in virulence or change in clinical disease presentation or a decrease in effectiveness** of public health and social measures or available diagnostics, vaccines, therapeutics are also considered.
- A variant may be classified as a VOC by the WHO in consultation with the **WHO SARS-CoV-2 Virus Evolution Working Group**.

**How do variants of a virus emerge?**

- The variants of a virus have **one or more mutations that differentiate it** from the other variants that are in circulation.
- The goal of the virus is to **reach a stage where it can cohabitate with humans** because it needs a host to survive.
    - It implies that any **virus is likely to become less severe as it keeps evolving**, but in this process it can attain some mutations that may be able to escape the body's immune response or become more transmissible.
- The **B.1.617 variant of the virus** has two mutations referred to as **E484Q and L452R.**

**Classification of coronavirus variants**

- The **Public Health England (PHE)** says that if the variants of SARS-CoV-2 are considered to have **concerning epidemiological, immunological or pathogenic properties**, they are raised for formal investigation.
- The variants emerging from the B.1.617 lineage are designated as **Variants Under Investigation (VUI)** with a year, month, and number.
- The US Centers for Disease Control and Prevention (CDC) classifies variants into three categories **variant of interest (VOI), variant of concern (VOC)** and **variant of high consequence.**
- The CDC defines a **VOI** as a variant with:

- Specific genetic markers that have been associated with changes to receptor binding;
- Reduced neutralization by antibodies generated against previous infection or vaccination; and
- Reduced efficacy of treatments, potential diagnostic impact, or predicted increase in transmissibility or disease severity.

- A **VOC** is defined as a variant for which there is:
  - Evidence of an increase in transmissibility;
  - More severe disease (e.g. increased hospitalizations or deaths);
  - Significant reduction in neutralization by antibodies generated during previous infection or vaccination; and
  - Reduced effectiveness of treatments or vaccines, or diagnostic detection failures.

## 2.8 1st BRICS Employment Working Group (EWG) Meeting

Recently, the Secretary of the Ministry of Labour and Employment has chaired the **1st BRICS Employment Working Group (EWG) Meeting.**

- India has assumed **BRICS Presidency** for the year 2021.

**Key Highlights of BRICS Employment Working Group (EWG)**

- The **prime agenda** for the discussions were:
  - Promoting Social Security Agreements amongst BRICS Nations;
  - Formalization of labour markets;
  - Participation of women in labour force; and
  - Gig and platform workers – Role in labour market
- The participants were **Brazil, Russia, India, China, South Africa** and the representatives of **International Labour Organization (ILO)** and **International Social Security Agency (ISSA).**
- The Member Nations resolved to enter into dialogue and discussion with each other

and take it forward towards **signing of the agreements.**

- The **Social Security Agreement** would help the international workers to port their benefit to their home countries thereby preventing loss of their hard earned money.
- The member countries resolved to **promote participation of women in remunerative, productive and decent work** and to extend social security cover to the women workers engaged in informal sector.
- The member nations discussed how the **proliferation of Digital Labour Platforms** is transforming the labour processes in the world of work.

**International Social Security Agency (ISSA)**

- It is the **world's leading international organization** for social security institutions, government departments and agencies.
- It promotes **excellence in social security administration** through professional guidelines, expert knowledge, services and support to enable its members to develop dynamic social security systems and policy throughout the world.
- It was **founded in 1927** under the auspices of the **International Labour Organization.**
- It has its headquarters in **Geneva, Switzerland,** in the International Labour Office (ILO).

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## 2.9 Goa Maritime Symposium (GMS) – 2021

Recently, the Indian Navy hosted **Goa Maritime Symposium (GMS) – 2021** under the aegis of Naval War College, Goa.

**About Goa Maritime Symposium (GMS) – 2021**

- It saw the participation of Naval representatives from **13 Indian Ocean Littoral countries**, which included:
    - India, Bangladesh, Comoros, Indonesia, Madagascar, Malaysia, Maldives, Mauritius, Myanmar, Seychelles, Singapore, Sri Lanka and Thailand.
- The theme for GMS-21 was focused on **"Maritime Security and Emerging Non-Traditional Threats: A Case for Proactive Role for IOR Navies"**.

- It will play a **constructive role in bringing together the stakeholders** who have a role in evolving strategies, policies and implementation mechanisms on the issues of common interest in maritime domain.
- The event provided a **forum for the articulation of views** on the crucial maritime issues, followed by theme-based discussions.

**Significance of IOR to India**

- There are IOR countries which are becoming **globally competitive and are developing new technologies**, including defence shipyards for design and shipbuilding.
- India sees the Indian Ocean Region as its **zone of influence and has been extending assistance to countries** in the region such as:
    - **Relief** at the time of calamities like oil spills and cyclones
    - **Helping in hydrographic surveys** and gifting patrols boats to countries to secure their exclusive economic zones
- New Delhi has also been **building up its profile as a net security provider** and partner of choice in the IOR.
    - It is against the backdrop of **China increasing its profile in the area** with port calls by Chinese ships to countries along the eastern seaboard of Africa and others.
- India is developing a **comprehensive Maritime Domain Awareness picture in the IOR**, which has resulted in signing of Technical Agreements for sharing of 'White Shipping Information'.

**Indian Ocean Region**

- The Indian Ocean region is one of **growing geopolitical importance** and is characterized by competition and intense rivalries involving both littoral states and external powers.
- The Indian Ocean is the **world's third-largest ocean** and constitutes about 20 percent of the water on the Earth's surface.
- It is bounded on the west by **East Africa**, on the north by India, on the east by**Australia**, and on the south by the Southern Ocean off the **coast of Antarctica.**

## 2.10 India's stand on Palestine issue

Recently, **India's permanent representative to the United Nations** has made a carefully crafted statement at the UN Security Council "open debate" on the **escalating Israel-Palestine violence.**

- The statement at UNSC strives to **maintain balance between India's historic ties with Palestine** and its **blossoming relations with Israel.**
- The statement appears to **implicitly hold Israel responsible for triggering the current cycle of violence** by locating its beginnings in East Jerusalem rather than from Gaza.
- The request that both sides refrain from **"attempts to unilaterally change the existing status quo including in East Jerusalem and its neighbourhoods"** seems to be a message to Israel about its settler policy.
- The statement was also emphatic that the **historic status quo at the holy places of Jerusalem** including the Haraml al Sharif/Temple Mount must be respected.
    - The site, **administered by Jordan**, is revered in both Islam and Judaism.
- India's policy on the **longest running conflict in the world** has gone from being unequivocally pro-Palestine for the first four decades, to a tense balancing act with its three-decade-old friendly ties with Israel.

**India's balancing act**

- The balancing began with **India's decision to normalise ties with Israel in 1992**, which came against the backdrop of the break-up of the Soviet Union.
- In 1990, the **Palestinian Liberation Organisation (PLO) lost much of its clout** in the Arab world by siding with Iraq and Saddam Hussein in the occupation of Kuwait.
- The opening of an **Indian embassy in Tel Aviv in January 1992** marked an end to four decades of giving Israel the cold shoulder, as India's recognition of Israel in 1950 had been minus full diplomatic ties.
    - The then PM Jawaharlal Nehru's reasoning for the decision to **recognise Israel was that it was "an established fact"**, and that not doing so would create rancour between two UN members.

- In 1948, India was the **only non-Arab-state among 13 countries** that voted against the UN partition plan of Palestine in the General Assembly that led to the creation of Israel.

**India and Palestinian Liberation Organisation (PLO)**

- The relationship with Palestine was almost an **article of faith in Indian foreign policy**for over four decades.
- At the 53rd UN session, **India co-sponsored the draft resolution** on the right of the Palestinians to self-determination.
    - In the 1967 and 1973 wars, **India lashed out at Israel** as the aggressor.
- In the 1970s, **India rallied behind the PLO and its leader Yasser Arafat** as the sole and legitimate representative of the Palestinian people.
- In 1975, **India became the first non-Arab country to recognise the PLO** as the sole representative of the Palestinian people, and invited it to open an office in Delhi.
- In 1988, when the **PLO declared an independent state of Palestine** with its capital in East Jerusalem, India granted recognition immediately.
- In 1992, the Indian government established a **diplomatic mission in Tel Aviv**, India opened a Representative Office in Gaza.
    - It was later moved to **Ramallah as the Palestinian movement split** between the Hamas (which gained control of Gaza) and the PLO.
- In 2003, **India voted in favour** of the UN General Assembly resolution against Israel's construction of a separation wall.
    - It voted for **Palestine to become a full member of UNESCO** in 2011.
- In 2012, **India co-sponsored the UN General Assembly resolution** that enabled Palestine to become a "non-member" observer state at the UN without voting rights.
    - India also supported the **installation of the Palestinian flag** on the UN premises in September 2015.

**India-Palestine-Israel after 2014**

- The first indication of the **new phase came with an abstention by India** at the UN Human Rights Council on a resolution welcoming a report by the HRC High

Commissioner.

- The report said it had **evidence of alleged war crimes committed by Israeli forces**and Hamas during the 2014 airstrikes against Gaza that killed over 2000.

- The **abstention was conspicuous** because in 2014, India had voted for the resolution through which the UNHRC inquiry was set up.
- In 2016, **India abstained again at on a UNHRC resolution** against Israel but the big change was the status of the historic city that both Israel and Palestine claim.

**Balancing Act by India**

- The **de-hypenhation is actually a careful balancing act,** with India shifting from one side to another as the situation demands.
- India voted in favour of a resolution in the General Assembly **opposing the Trump administration's recognition of Jerusalem** as the Israeli capital.
- In 2020, **India voted against Israel** in three resolutions:
  - One on the right of **self-determination of the Palestinian people**;
  - Second on **Israeli settlement policy**; and
  - Third on the **human rights situation in the Golan Heights.**

## 2.11 Cairn Energy-Air India Dispute

Recently, the British oil company **Cairn Energy Plc is suing Air India** in New York to seize its assets to enforce the **$1.2 billion arbitration award** it won against the Indian government in a retrospective tax dispute.

**What is the Cairn Energy-Air India dispute?**

- In 2020, a three-member **international arbitral tribunal** had ruled an unanimous verdict that the Indian government was in breach of the guarantee of fair and equitable treatment.
- It was against the **India-UK bilateral treaty** and that the breach caused a loss to the British energy company.

- It awarded **Cairn $1.2 billion** in compensation that India was liable to pay.
- The Cairn has moved a court in the **South District of New York against Air India** and India has also challenged the arbitration award in Netherlands.

**Why are the challenges in different jurisdictions?**

- India has moved an appeal in Netherlands because the **arbitration award was delivered in Hague.**
- Cairn has chosen New York to sue India because it has **located substantial assets** that it can recover the compensation from in that jurisdiction.
- **Air India's United States operations are headquartered** in this district, at 570 Lexington Avenue, New York.
- Cairn also told the court it has **initiated proceedings in numerous other locations**around the world seeking recognition and enforcement of the award.

**Why is Cairn Energy suing Air India?**

- The Cairn's main argument is that **Air India is the "alter ego" of India**, and that it should be held jointly and severally responsible for India's debts.
- The Cairn cited a **1983 US Supreme Court verdict** to argue that a principal-agent relationship exists between them.
- The court will have to determine:
    - The level of **economic control of Air India** by the government;
    - Whether **Air India's profits go to the government**; and
    - The degree to which **government officials manage the entity** or otherwise have a hand in its daily affairs, among others.

**What is the retrospective tax demand?**

- The arbitration was initiated by Cairn, similar to what Vodafone did for a breach relating to **India's 2012 retrospective amendments to tax laws.**
- In 2006, Cairn Energy made a **bid to consolidate its Indian assets** under a holding company called Cairn India Limited.
- Cairn UK transferred shares of **Cairn India Holdings to Cairn India**, essentially

transferring shares in non-Indian companies to an Indian holding company.

- The tax authorities in India said in the 2006 transactions, the share transfers **attracted capital gains tax of over Rs 6,000 crore** by Cairn UK.
- In 2012, following the Supreme Court ruling that a similar series of transactions involving Vodafone did not attract **capital gains as the transaction did not amount to transfer of a capital asset** within the meaning of Section 2(14) of the Income Tax Act, the government amended the law retrospectively.

**What is Retrospective Taxation?**

- It is a combination of **"retrospective" and "tax"** where "retrospective" means taking effect from a date in the past and "tax" refers to a new or additional levy of tax on a specified transaction.
- It effectively allows a country to pass a rule on **taxing certain products, items or services, and deals, and charge companies** from a time before the date on which the law is passed.
- The retrospective tax is not so easily welcomed by **taxpayers as it creates an additional levy** on the transaction which is already concluded when the provisions of law were different.

**Permanent Court of Arbitration (PCA)**

- It was **established in 1899** to facilitate arbitration and other forms of dispute resolution between states.
- It is an **intergovernmental organization** dedicated to serving the international community in the field of dispute resolution.
- The PCA has a **three-part organizational structure** consisting of:
    - **Administrative Council** that oversees its policies and budgets,
    - **Panel of independent potential arbitrators** known as the Members of the Court, and
    - **Secretariat**, known as the International Bureau, headed by the Secretary-General.

## 2.12 India loses Farzad-B gas field

Recently, India has lost **Farzad-B gas field in the Persian Gulf** after Iran awarded a contract for developing the giant gas field to a local company.

**Farzad-B gas field**

- It was discovered by **ONGC Videsh Ltd** in the **Persian Gulf.**
- The **ONGC Videsh Ltd (OVL)**, the overseas investment arm of state-owned Oil and Natural Gas Corp (ONGC), had in 2008 discovered a giant gas field in the **Farsi offshore exploration block.**
- The field holds **23 trillion cubic feet of in-place gas reserves**, of which about 60 per cent is recoverable.
- It holds gas condensates of about **5,000 barrels per billion cubic feet of gas**.
- OVL and its partners had offered to **invest up to USD 11 billion** for the development of the discovery, which was later named Farzad-B.

**Key Highlights**

- The National Iranian Oil Company (NIOC) has signed a **contract worth USD 1.78 billion**with Petropars Group for the development of Farzad B Gas Field.
- The **buyback contract** signed has envisaged daily production of 28 million cubic meters of sour gas over five years.
- Farzad-B is the **second Indian investment proposal to come unstuck in Iran** despite commitments by the top leadership of both countries.
    - In 2020, Teheran had **dropped India's $2-billion offer** and decided to build the **Chabahar railway link** on its own.

## STORY SO FAR

- ONGC Videsh Ltd (OVL) in 2008 discovered a giant gas field in the Farsi offshore exploration block
- OVL and its partners offered to invest up to $11 billion for the development of the discovery, later named Farzad-B
- Later, NIOC informed OVL of its intention to conclude the contract for developing Farzad-B with an Iranian firm, snubbing the Indian offer, *PTI* reported

## WHY IT MATTERED

- The field holds 23 trillion cubic feet of in-place gas reserves, of which about 60 per cent is recoverable
- It also holds gas condensates of about 5,000 barrels per billion cubic feet of gas
- The buyback contract signed on Monday envisages daily production of 28 million cubic meters of sour gas over five years

**Farzad-B gas field**

- The OVL, with **40 per cent operatorship interest**, signed the **Exploration Service Contract (ESC)** for the block on December 25, 2002.
- The OVL discovered gas in the block, which was **declared commercially viable by NIOC** in 2008.
- The firm submitted a **Master Development Plan (MDP) of Farzad-B gas field** in April 2011 to Iranian Offshore Oil Company (IOOC).
- A **Development Service Contract (DSC) of the Farzad-B gas field** was negotiated till November 2012, but could not be finalized due to difficult terms and international sanctions on Iran.
- In April 2015, negotiations restarted with **Iranian authorities to develop the Farzad-B gas field** under a new Iran Petroleum Contract (IPC).
- In April 2016, both sides negotiated to develop the **Farzad-B gas field under an integrated contract** covering upstream and downstream.

## 2.13 BRICS Astronomy Working Group

Recently, India hosted the 7th meeting of the **BRICS Astronomy Working Group (BAWG)**as well as the astronomers from these countries.

**BRICS Astronomy Working Group**

- It provides a **platform for BRICS member countries** to collaborate in the field of astronomy.
- It will help **seek funding support to realise the flagship project** whenever funding opportunity announced by BRICS funding agencies.

**Key Highlights of BRICS Astronomy Working Group**

- In the BAWG meeting, the delegates agreed to **develop a flagship project** in this area.
- It witnessed participation from **all five BRICS countries (Brazil, Russia, India, China and South Africa)** with more than 50 participants, including researchers, academicians and government officials.
- The members of the **working group indicated future directions of research** in this area such as:
  - Building network of intelligent telescope and data network;
  - Study of transient astronomical phenomena in universe; and
  - Big data, artificial intelligence, machine learning application to process the voluminous data generated due to enhance multi-wavelength telescope observatory.
- The delegates deliberated on **strategic and operational matters and recommended the networking of existing telescopes** in BRICS countries and creating regional data network.

## INTERNATIONAL RELATIONS

### 3.1 Lag B'Omer Festival

Recently, at least 44 people were crushed to death in a stampede as tens of thousands of **ultra-Orthodox Jews** gathered in northern Israel to celebrate the annual **Lag B'Omer festival**.

**Lag B'Omer Festival**

- It is an **annual Jewish festival** observed during the **Hebrew month of Iyar.**
- It is celebrated on the **33rd day of the Omer**, the **49-day period between Passover and Shavuot.**

- Lag B'Omer is the **only day during the 49-day period** when celebration is permitted.
- Tens of thousands of **ultra-Orthodox Jewish pilgrims make their way** to the base of **Mount Meron** every year to mark the occasion.
- The pilgrims aims to pay their respects to **Rabbi Shimon Bar Yochai**, a second century sage and mystic, who is believed to have died on this day.

**Rabbi Shimon**

- Rabbi Shimon was said to have been a **gifted Talmudic scholar and a disciple of Rabbi Akiva**, one of the greatest Jewish sages of all time.
- According to some accounts, Rabbi Shimon authored the **'Zohar'**, which is the **main work of Kabbalah, or Jewish mysticism.**
- Jews believe that on the day of his death, **Rabbi Shimon told his disciples the many secrets of the Kabbalah**, which some believe is how Lag B'Omer became a day of celebration.

## 3.2 Cinco de Mayo

Recently, with parties, parades and Mexican cuisine and music, **Cinco de Mayo** was celebrated on 5th May.

**Cinco de Mayo**

- It is a day that celebrates **Mexican national pride, marking Mexico's military victory** on its soil over French forces in 1862.
- Mexico was then **led by President Benito Juárez (1806-1872)**, a revered democratic reformer and opponent of foreign intervention in his country.
- In Puebla, Cinco de Mayo is **celebrated annually with speeches, parades,** and by reenacting episodes of the 1862 battle.
- The city today houses a **museum dedicated to the battle**, and the actual battlefield is maintained as a park.
- In the 1860s, Mexico had been severely **weakened by lengthy wars** over the previous two decades i.e. **the Mexican-American War (1846-48) and the internal**

**Reform War (1858-61).**

- By April 1862, Britain and Spain negotiated with Mexico and withdrew, but **France decided to establish an empire in Mexican territories** with the support of the local landowning classes.

**Battle of Puebla**

- In late 1861, a **French fleet attacked the Mexican port of Veracruz** on the country's eastern coast and landed a large army that drove the Juárez government into retreat.
- The French encountered stiff **resistance from Mexican forces** as they moved from Veracruz to the capital Mexico City.
- At Puebla, over 100 km ahead of Mexico City, a poorly equipped and outnumbered **Mexican force decisively defeated the advancing French troops** on May 5, 1862.
- The event marked a **significant political victory of Mexican republicans and President Juárez**, and helped establish a sense of national unity in the country.

## 3.3 Global Risks Report 2021

Recently, the **World Economic Forum (WEF)** has released the **Global Risks Report 2021.**

**Key Highlights**

- The 2021 edition has listed **infectious diseases as the top global risk** and displaced climate change.
    - The report notes that **Covid-19 is an immediate threat** for the world for the next two years.
- The WHO estimates that the **pandemic halted immunisation drives in 68 countries**, putting 80 million children under the age of one the risk of vaccine-preventable diseases.
- The report also mentions **12 new risks** i.e. deteriorating mental health, mass youth disillusionment, prolonged economic stagnation, systemic collapse of important industries, social security systems and multilateral institutions etc.
- The report found out that with **melting permafrost, increase in the geographic**

**spread of tropical pathogens** because of warming, infectious diseases are going to be a bigger threat because of climate change.

- **Economic fragility and societal divisions are set to increase:** The underlying disparities in healthcare, education, financial stability and technology have led the crisis to disproportionately impact certain groups and countries.
    - The pandemic's economic shockwave such as **working hours equivalent to 495 million jobs were lost** in the second quarter of 2020 alone will immediately increase inequality.
- **Growing digital divides and technology adoption pose concerns:** COVID-19 has accelerated the Fourth Industrial Revolution, expanding the digitalization of human interaction, e-commerce, online education and remote work.
    - A widening digital gap can **worsen societal fractures** and undermine prospects for an inclusive recovery.
- **A doubly disrupted generation of youth is emerging in an age of lost opportunity:** The risk of "youth disillusionment" is being largely neglected by the global community, but it will become a critical threat to the world in the short term.
- **Climate continues to be a looming risk as global cooperation weakens:** The responses to the pandemic have caused new domestic and geopolitical tensions that threaten stability.
    - The digital division and a future **"lost generation"** are likely to test social cohesion from within border exacerbating geopolitical fragmentation and global economic fragility.

**Global Risks Report**

- The foundation of the report continues to be **WEF's annual Global Risks Perception Survey.**
- It is completed by over **650 members of the WEF's diverse leadership communities.**
- The 16th edition of the World Economic Forum's Global Risks Report analyses the **risks from societal fractures** such as risks to human health, rising unemployment, widening digital divides, youth disillusionment, and geopolitical fragmentation.

## 3.4 Possibility of a Second Scottish Independence Referendum

Recently, Scotland took to the polls to vote for its n**ext parliament with a third of the results** expected to be announced.

- Scottish First Minister Nicola Sturgeon, who leads the pro-independence Scottish National Party (SNP), has described this **election as the most important in her country's history.**
- The Scottish election campaigns have been widely dominated by discussions around **another independence referendum.**

**Arguments for independence**

- The **support for Scottish independence has registered near or above 50% of support**over the last year, largely due to widespread opposition to Brexit and Johnson's government in London.
- In the 2016 Brexit referendum, **62% of Scottish voters opposed leaving the European Union** only to be overruled by the rest of the United Kingdom.
- The **Scottish politicians and voters have been outspoken in their support for European unity** and have looked for ways to maintain Scotland's ties with Brussels.
- **Nearly 90% of the UK's population is English** and despite parliamentary seats being created to over-represent Scotland, England still has 532 out of 650 seats.
- The Scottish industries have been badly affected by Brexit and voters believe that **independence would give them the opportunity to mitigate** that damage and take control of their economy.
- The independence would give **Scottish fisheries a chance to re-establish trade relations with the EU**, thus ending years of bureaucratic red tape caused by Brexit.
- It would give **Scotland full autonomy over its oil and gas revenues** which are currently shared with London.

**Arguments against independence**

- A large share of Scottish voters sees **advantages in remaining a part of the UK** by putting aside the need to hold a second costly referendum so soon after the first one.
- Britain has a **population of 64 million** compared to Scotland's population of 5

million.

- Being a part of a **relatively large global power confers upon Scotland significant bargaining power** in trade agreements and security pacts.
- It also provides it with **greater resilience against economic shocks.**

- England is by far **Scotland's largest trading power** and destroying the common market and establishing border controls would have severe **ramifications on the Scottish economy.**
- Scotland is also currently **fiscally dependent on the UK**, paying less to union coffers than it receives in return.
    - If Scotland were to leave the UK, it would likely have to **raise taxes in order to maintain current public spending**.

**How Scotland could push for another referendum?**

- A referendum held without the consent of the British would **struggle to gain international recognition** similar to the 2017 Catalonian movement that was rejected by Madrid.
- Under the Scotland Act of 1998, the Union between **England and Scotland is a matter reserved for the British parliament**.
- Scotland will have limited options to hold a legally binding, internationally recognised referendum without the green light from London.

**Impact of Scottish independence**

- The independence of Scotland from the UK would have **widespread ramifications for both England and Scotland**, as well as on the stability of the union as a whole.
- The London School of Economics has predicted that **independence from the UK would cost Scotland up to three times** as much in lost revenue as Brexit will.
- The negotiating of a trade deal with the EU or re-entering the bloc altogether will be a **costly and time-consuming process.**
- Scotland would also have to **bolster its defence capabilities, extract itself from British public funding schemes** and **establish independent trade and security arrangements**with other countries.
- England and Scotland would both have to consider the matter of **creating a**

**physical international border** and account for the considerable number of people and goods that currently cross between the two nations.

- The success or failure of the hypothetically independent Scottish state would have **ramifications on the Northern Irish and Welsh independence movements**respectively.

## 3.5 Facebook Oversight Board

Recently, the **Facebook Oversight Board** has held that the platform had rightly restricted the former president of the United Sates from accessing his page and posting content on it after the Capitol Hill violence.

- Trump had **access to his Facebook and Facebook-owned Instagram accounts cut off** on January 7, a day after the deadly insurrection in Washington DC.
- **Trump's accounts were suspended indefinitely** after Facebook believed that the risks of allowing the President to continue to use our service during this period are simply too great.

**Facebook Oversight Board**

- The board is an **independent, court-like entity** for appealing content decisions on Facebook-owned platforms.
- It formally started **deliberating in October 2020** and has also been called **"Facebook's Supreme Court".**
- It is **made up of 20 experts** in areas like free expression, human rights, and journalism.
- The **content moderation decisions made by Facebook and Instagram can be appealed** to the board once users have gone all the way through the company's internal review process.
- Facebook says that **decisions made by the board are final.**
- A decision made by the board **will be binding and Facebook will implement it promptly**, unless implementation of a resolution could violate the law.
- It is **funded by a $130 million trust** created by Facebook.
- Its goal is to **review moderation decisions made by the company** and decide

whether they were made in accordance with its stated values.

**Reasons provided by Facebook Oversight Board on restriction**

- It said that the social media giant must **review the matter to determine and justify proportionate response** that is consistent with the rules that are applied to other users of its platform.
- The Board found that in **maintaining an unfounded narrative of electoral fraud and persistent calls to action**, the former US President has created an environment where a serious risk of violence was possible.
- It highlights that there was a **clear, immediate risk of harm and his words of support for those involved in the riots** legitimized their violent actions.

## 3.6 Clashes at Jerusalem's Al-Aqsa Mosque

Recently, the Israeli police stormed the **Al-Aqsa mosque compound in East Jerusalem**, leaving a reported 300 people injured.

- It came on a day **Israel observes as Jerusalem Day,** and marked the fourth day of clashes at one of the most revered and the most contested sites of the Palestinian-Israeli conflict.

**Al-Aqsa Mosque**

- It is located on a plaza at **Temple Mount**, which is known in Islam as **Haram-e-Sharif.**
    - The Mount is also **Judaism's holiest site.**
- The most imposing structure on the compound is the **Dome of the Rock**, with its**golden dome.**
- The **Western Wall**, also known as the **Wailing Wall sacred to Jews**, is one side of the retaining wall of the Al-Aqsa compound.
- **Al-Aqsa translates** from Arabic to English as **"the Farthest Mosque"**.
- According to the Quran, it is believed that **Prophet Muhammad travelled from Mecca to Al-Aqsa** during the Night Journey, and then on to heaven.
- It was originally built as a small prayer house but the mosque was **reconstructed**

**by the Umayyad caliph Abd al-Malik in 705 CE.**

**Significance of Al-Aqsa Mosque**

- Al-Aqsa is **central to the rival claims over Jerusalem** because both Israel and Palestine have declared it their capital.
- In July 1980, the **Israeli Parliament passed the Jerusalem Law** declaring it the country's capital.
- The **Palestinians declared Jerusalem the capital of the putative state** of Palestine by a law passed by the Palestinian Authority in 2000.
- The 1988 Palestinian Declaration of Independence also declared **Jerusalem as the capital.**

## 3.7 Ransomware Attack on US Pipeline Network

Recently, a **ransomware attack on a key US pipeline network** has led to a disruption in fuel supplies in the eastern part of the United States.

- The **Colonial Pipeline Company**, which transports about 45 per cent of all petrol and diesel consumed on the east coast of the US, was forced to shut down operations after a cyberattack.
- The US Federal Bureau of Investigation has confirmed that a **criminal gang called Darkside was responsible** for compromising the Colonial Pipeline network.
- The shutdown led to the US federal government declaring a **regional emergency** to allow transportation of fuels through tanker trucks to tide over the impact of shortages.

**Ransomware attack**

- A ransomware attack is a **cyber-attack using malware that encrypts the victim's files**and requires users pay a ransom to decrypt the files.
- The hackers can then **threaten to leak the data** if the ransom is not paid.
- It takes **advantage of human, system, network, and software vulnerabilities** to infect the victim's device.

**Impact of cyberattack on oil prices**

- The **oil prices rose in response to the attack on Colonial Pipeline**, with the price of Brent crude rising to $69 per barrel before falling to $67.8.
- The experts noted that a **prolonged shutdown of the operations of the pipeline could push up petrol prices in the US** as demand peaks during the summer.
- The disruption has already led to an **uptick in international refining margins**, pushing up the price of auto fuels.
- An **increase in the price of petroleum products in Asia** could provide a further push to petrol and diesel prices in India, which are already at record high levels.
- The crude oil prices have risen over the past fortnight despite a surge in Covid-19 infections in Asia due to **expectations of increasing crude oil demand from the US and Europe.**

**Addressing cyberattacks by oil and gas companies**

- The experts noted that there was a need to move towards fortifying approaches to prevent attacks including employing a **zero-trust security framework** in enterprise networks.
    - A zero-trust approach means **anything is suspected whenever any activity is done on the network**, and every user, including the CEO, will have to be verified time and again.
- The expert added that other measures such as **Cloud Access Security Brokers (CPAB)**, which act as intermediaries between users and cloud service providers.
    - It could **"give teeth"** to an overall cybersecurity strategy.
- The expert noted that India's oil and gas PSUs were making efforts to **beef up security**, and that organisations managing critical infrastructure such as pipelines and refineries were required by the government to **implement certain security measures.**

## 3.8 Israel's Iron Dome

Recently, the videos on social media showed rockets fired from Gaza being intercepted by

the **Israeli Iron Dome air defence system.**

**Iron Dome**

- It is a **short-range, ground-to-air, air defence system**.
- It includes a **radar and Tamir interceptor missiles** that track and neutralise any rockets or missiles aimed at Israeli targets.
- It is used for **countering rockets, artillery & mortars (C-RAM)** as well as **aircraft, helicopters and unmanned aerial vehicles.**
- It can protect **deployed and manoeuvring forces,** as well as the Forward Operating Base (FOB) and urban areas, against a wide range of indirect and aerial threats.
- The genesis of the Iron Dome goes back to the **2006 Israeli-Lebanon war,** when the Hezbollah fired thousands of rockets into Israel.
- In 2007, Israel announced that its **state-run Rafael Advance Systems** would come up with a new air defence system to protect its cities and people.
- It was developed with **Israel Aerospace Industries.**
- The Iron Dome was **deployed in 2011.**

**Working of Iron Dome System**

- It has three main systems that work together to provide a **shield over the area where it is deployed,** handling multiple threats.
- It has a **detection and tracking radar to spot any incoming threats**, a battle management and weapon control system (BMC), and a missile firing unit.
- The BMC basically **liaises between the radar and the interceptor missile.**
- It is capable of being used in **all weather conditions**, including during the day and night.

**What kind of systems does India have?**

- India is in the process of **buying S-400 air defence systems from Russia** for over $5 billion.
    - S400 has to cater to **shooting down missiles, aircraft in some 300 to 400 km range.**

- Presently, India has **Akash short-range surface-to-air missiles**, and Russian systems including Pechora.

**S-400 Air Defence Systems**

- The **S-400 Triumf, (NATO calls it SA-21 Growler),** is a **mobile, surface-to-air missile system (SAM)** designed by Russia.
- It is the **most modern air defence system** in the Russian arsenal meant for export.
- It is capable of **destroying incoming hostile aircraft, missiles and even drones**within a range of up to **400 km.**
- It has a **tracking capability** of nearly 600 km.
- It has been designed to **knock down flying targets**, including those equipped with stealth technologies, at a distance of about 400 km.
- It is currently in production in Russia and will undergo a series of trials before its arrival in India by the **end of 2021.**
- It is also capable of taking out **ballistic missiles and hypersonic targets.**
- It is the most **dangerous operationally deployed modern long-range SAM (MLR SAM)** in the world, considered much ahead of the US-developed Terminal High Altitude Area Defense system (THAAD).

## 3.9 Diplomatic Immunity

Recently, the wife of Belgium's ambassador to South Korea will now be exercising her **diplomatic immunity to avoid criminal charges** after she allegedly hit two staff members at a boutique in Seoul.

**Diplomatic Immunity**

- It is a **privilege of exemption from certain laws and taxes** granted to diplomats by the country in which they are posted.
- The custom was formed so that **diplomats can function without fear, threat or intimidation** from the host country.
- The diplomatic immunity is **granted on the basis of two conventions**, popularly called the **Vienna Conventions**;

- The Convention on Diplomatic Relations, 1961, and
- The Convention on Consular Relations, 1963

- **India ratified** the Vienna Convention on Diplomatic Relations in 2008.

**What is the extent of this immunity?**

- According to the **Vienna Convention on Diplomatic Relations, 1961**, the immunity enjoyed by a diplomat posted in the embassy is "inviolable".
- The diplomat **cannot be arrested or detained** and his house will have the same inviolability and protection as the embassy.
- It is possible for the **diplomat's home country to waive immunity** but this can happen only when the individual has committed a 'serious crime', unconnected with their diplomatic role or has witnessed such a crime.
- The diplomatic immunity is **intended to "insulate" diplomats from harm** but it does not insulate their countries from a bad reputation and a blow to bilateral ties.
- The privilege of diplomatic immunity is **not for an individual's benefit**.
    - If a **diplomat acts outside his business** of conducting international relations, a question arises over whether his immunity still applies.

**Applicability of immunity under Vienna Convention**

- The Vienna Convention **classifies diplomats according to their posting in the embassy**, consular or international organisations such as the UN.
- A nation has **only one embassy per foreign country**, usually in the capital, but may have multiple consulate offices, generally in locations where many of its citizens live or visit.
- The diplomats posted in an **embassy get immunity**, along with his or her family members.
- The diplomats posted in **consulates also get immunity but they can be prosecuted** in case of serious crimes, that is, when a warrant is issued.

## 3.10 Global Entry Programme

On the request of the U.S. authorities, **Indian security agencies** in the past two years checked

the antecedents of more than 9,000 Indians who wanted to enroll for the paid **Global Entry Program.**

**Global Entry Programme**

- It is a **US Customs and Border Protection (CBP)** program.
- It allows **speedy clearance for low-risk travellers** upon their arrival in US.
- The travellers are **pre-approved for the programme** after a rigorous background check.
- In-person interviews are also taken to check the **'low-risk' status of the applicants**before the enrollment.

**Members of Global Entry Programme**

- **India, citizens of Colombia, United Kingdom, Germany, Panama, and Singapore** are eligible to become members of this programme.
- **South Korea and Mexican nationals** are also included under Global Entry Programme.
- **Canadian residents can apply** for enrollment under this through their membership in NEXUS programme.

**Eligibility under Global Entry Programme**

- The citizens of all the **above-mentioned countries can apply** to become members of Global Entry Programme.
- In the case of minors, **consent of the parent or a legal guardian** is a must to get enrolled.
- The membership is **valid for five years.**
- The membership can be **cancelled or denied** in case the US Customs and Border Protection finds any false information in the application.
- It is imperative that the **individual has no past criminal records** of any kind and also that he/she is not connected with any money laundering case.
- Any person who has **violated any customs, immigration or agriculture regulations or laws** in any country also stands ineligible.

**How to apply for Global Entry Programme**

- A Global Online Enrollment System (GOES) account is **mandatory for enrollment**irrespective of the age of the members.
- The account can be made at the **US Customs and Border Protection Page**.
- The form will be completed after paying a **nominal non-refundable application fee**.
- In case the form is conditionally approved, a message will be **sent on the GOES account** after which an interview can be scheduled.

**Benefits of Global Entry Programme**

- The biggest advantage of getting enrolled in this programme is that you will **no longer have to stand in the long queues** for immigration.
- The approved applicants can make their way ahead through **automatic kiosks instead of standing in the immigration lines**.

## 3.11 New York's Vax and Scratch Programme

Recently, the New York's Governor Andrew Cuomo has announced **Vax and Scratch Programme.**

**Vaccination in the US**

- In the US, nearly **280 million doses of COVID-19 vaccines** have been administered so far.
- Overall, about **160 million (48.2 per cent of the population)** people have received at least one dose and about 126 million (38.1 per cent of the population) people have been fully vaccinated.
- Some states in the **country are now adopting strategies** that incentivise people to get vaccinated.

**Vax and Scratch Programme**

- It is a **new vaccination programme** that will provide free lottery tickets to those **individuals over the age of 18 years** who choose to get vaccinated from one

of the ten state-run sites.

- The ten sites located in **New York City, Long Island, Mid-Hudson, Central New York, Finger Lakes, Mohawk Valley and Western New York regions** with either the first dose of the Pfizer vaccine or the single-shot Johnson and Johnson vaccine.

- These **scratch-off lottery tickets** have a maximum prize of $5 million and a minimum prize of $20.

**Status of the vaccination campaign in New York**

- The state has vaccinated nearly **63 per cent (9,907,926) of the population** over the age of 18 years.
- **51 per cent** (10,174,323) of the total population of the state has received at least one dose.
- While **42.9 per cent of the total population is fully vaccinated**, 53.5 per cent of the population in the 18 plus age group is fully vaccinated.

## 3.12 Havana Syndrome – US officials sickened

Recently, two US officials have shown symptoms of a **mystery illness** that is linked to **Havana Syndrome.**

- In 2020, **a report** by the **National Academies of Sciences (NAS), US** found **directed microwave radiation** to be the **plausible cause** of the **Havana syndrome.**
- **Increasing** number of cases is being considered a **mass psychogenic illness.**

**Mass Psychogenic Illness**

- Mass psychogenic illness is when people in a group start feeling sick at the same time even though there is no physical or environmental reason for them to be sick. They could think they've been exposed to something dangerous, like a germ or a toxin (poison).

**National Academy of Sciences**

- It is a **non-profit, Government Organisation in the United States of America.**

- NAS was founded in 1863 as a result of an Act of Congress, which was approved by Abraham Lincoln.
- The organisation **offers its reports to the Government** with regard to the Science and Technology projects.
    - **In late 2016,** a few diplomats from the **USA and their employees** had reported certain usual symptoms during their stay in **Havana, Cuba.**
    - They experienced some **odd physical sensations** and heard **peculiar sounds,** after which they **started feeling sick.**
    - The **US** had even **accused Cuba** of carrying out **sonic attacks.** But Cuba denied the accusations of the sonic attacks and refused awareness of any such illness or syndrome.
    - Ever since **many bodies and institutions** have been researching the cause of the **Havana syndrome** and many plausible factors have been discovered till date.
    - The symptoms of the syndrome include Nausea, Severe headaches, Fatigue, Dizziness, Sleep problems, Hearing loss.
        - A few of those who had been affected more faced **chronic issues like vestibular processing and cognitive problems.**
- **Microwave Weapons:**
    - **Direct Energy Weapon (DEW):**
        - They are a type of **direct energy weapons,** which aim **highly focused energy** in the form of **sonic, laser, or microwaves,** at a target.
        - They release **electromagnetic radiations** which cause sensations in the human body.
            - Electromagnetic radiation heating the water in the human body makes a person feel dizziness and nausea.
    - **Countries with Microwave Weapons:**
        - A number of countries are thought to have developed these weapons to **target both humans** and **electronic systems.**

- **China had first** put on display its microwave weapon, **called Poly WB-1,** at an air **show in 2014.**
- The **US** has also developed a **prototype microwave-style weapon,** which it calls the **"Active Denial System",** which is the first non-lethal, directed-energy, counter-personnel system with an extended range greater than currently fielded non-lethal weapons.

- **India's Plans for Directed Energy Weapons:**
  - Recently, the **Defence Research and Development Organisation (DRDO) has** announced its plans to develop **(DEWs)** using **high-energy lasers** and **microwaves.**
  - **Development of DEWs** is seen as particularly important in the context of India's worsening security environment, especially its ties with China.
- **Concerns:**
  - These weapons are a cause of concern as they **can affect both machines and human beings.**
  - They **can cause long-term damages without leaving a single mark on the human body.**

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## 3.13 China builds key highway through Brahmaputra Canyon in Tibet close to Arunachal Pradesh border

Recently, China has completed construction of a **strategically significant highway** enabling greater **access to remote areas along the disputed border** with Arunachal Pradesh in India.

- The construction began in 2014 and is **part of a wider infrastructure push in border areas in Tibet.**
- The highway passes through the **Grand Canyon of the Brahmaputra river** (Yarlung Zangbo in Tibet).
  - The **Brahmaputra is the longest river in Tibet** and its **valley is the world's deepest with a 7,000-metre drop** from the highest mountain peak to the lowest basin.

- It connects Pad Township in the city of **Nyingchi and Medog County.**
    - Nyingchi and Medog County both are located in **Tibet Autonomous Region (TAR), China.**
    - **Medog is the last county in Tibet,** which is located **close to the Arunachal Pradesh border.**
    - **China claims Arunachal Pradesh as part of South Tibet,** which is **firmly rejected by India.** The India-China border dispute covers the 3,488-km-long **Line of Actual Control (LAC).**
- The Highway will shorten **the road length** connecting the city proper of Nyingchi and Medog County and will reduce the **travel time by eight hours.**

- **Other Strategic Constructions by China:**
    - **Railway Line:**
        - In 2020, China had begun work on a **strategically significant railway line** that will link **Sichuan province with Nyingchi in Tibet,** which lies close to Arunachal Pradesh border.
            - It is the second major rail link to Tibet after the **Qinghai-Tibet railway that opened in 2006.**
    - **New Villages:**
        - In January 2021, there were reports of **Chinese construction of three villages** in Arunachal Pradesh 5 kilometres from the Bum La pass.
        - In 2020, satellite images emerged showing a **new village called Pangda built 2-3 km into what Bhutan sees as its land.**
        - In 2017, the **TAR** government launched a plan to build **moderately well-off villages in border areas.**
            - Under this plan 628 **first line and second line villages —** referring to those right on the border and others in remote areas slightly further within — would be developed in the prefectures of Ngari, Shigatse, Shannan and Nyingchi, **along China's borders with**

**India, Bhutan and Nepal.**

- **Concerns for India:**
    - The highway is also expected to play a key role in the surveying of and planning for the **mega Yarlung Zangbo hydro-power project** that China is planning to build at the canyon in the same Medog county, **triggering unease among downstream countries like India.**
    - A highway connecting the border will **largely improve the efficiency and convenience of military personnel and material transportation** and logistical supplies in the border area.
- **Steps Taken by India:**
    - India will spend 10% funds of the **Border Area Development Programme (BADP)** only to improve the infrastructure along the China border.
    - The **Border Roads Organisation (BRO)** constructed the **Daporijo bridge** over Subansiri river in Arunachal Pradesh.
        - It links roads leading upto the LAC between India and China.
    - Foundation of a **tunnel at Nechiphu in West Kameng district of Arunachal Pradesh has been laid down which will shorten travel time for troops** till the LAC through Tawang, which China claims to be its territory.
    - **A tunnel is being constructed under the Se La pass in Arunachal Pradesh** which connects Tawang to the rest of Arunachal and Guwahati.
    - The state government of Arunachal Pradesh has advocated **selection of 10 census towns along the India-China border** as pilot projects for infrastructure development in order to stop people living along its international borders, specifically with China, from migrating to faraway urban centres in the State.
    - **Sisseri River Bridge**, located at **lower Dibang Valley in Arunachal Pradesh,** connects Dibang Valley and Siang.
    - In 2019, the Indian Air Force inaugurated resurfaced runway at India's **easternmost Village-Vijaynagar (Changlang district)** in Arunachal Pradesh.

- In 2019, the Indian Army conducted **exercise 'HimVijay'** in Arunachal Pradesh and Assam with its newly **created Integrated Battle Groups (IBG).**
- **Bogibeel bridge**, which is India's longest road-rail bridge connecting Dibrugarh in Assam to Pasighat in Arunachal Pradesh was inaugurated in 2018.
    - It will **facilitate quicker movement of troops and equipment** to areas near the India-China border.

- **India needs to be vigilant enough for any new development in China near its border** to protect its interests efficiently. Further, it **needs to build robust Infrastructure in difficult border areas** in its territory to ensure movement of personnel and other logistical supplies in an efficient manner.

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## 3.14 Lithuania Quits – China's 17+1 is now 16+1

Recently, **Lithuania** quit **China's 17+1** cooperation forum with **central and eastern Europe,** by calling it **"divisive",** now it is **16+1.**

- **Lithuania (Baltic Country)** urged other **EU (European Union)** members to pursue **"a much more effective 27+1 approach and communication with China."**
    - The **17+1 (China and Central and Eastern Europe Countries) initiative** is a **China-led format** founded **in 2012** in **Budapest** with an aim to expand cooperation between Beijing and the **CEE (Central and Eastern Europe)** member countries, with investments and trade for the development of the CEE region.
    - **Member Countries:**
        - The initiative includes **twelve EU** member states and **five Balkan states —** Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia and Slovenia.
    - **Aim and Objectives:**

- The framework focuses on infrastructure projects such as bridges, motorways, railway lines and modernisation of ports in the member states.
- The platform is largely seen as an extension of China's flagship **Belt and Road initiative (BRI).**
    - **India has consistently opposed BRI** as a key part of it passes through Pakistan-occupied Kashmir (PoK).
        - **China's Narrative towards 17+1 Initiative:**
            - China's narrative towards the 17+1 initiative is about improving its relations with the European countries that are less developed as compared to the Western European states.
            - Trade relations between China and the CEE countries remained modest, leading to an increasing trade deficit since its inception.
        - **Growing Distance:**
            - Czech Republic President's decision to skip the ninth summit of the 17+1 initiative citing lack of actual investments, had showcased the differences between Beijing and Prague.
            - Some CEE countries refused to attend the BRI event in 2020.
        - **The Huawei Equation:**
            - Some CEE countries signed a declaration with the US to ban **China's 5G network** expansion.

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**Baltic Countries**

- Baltic states, the **northeastern region of Europe,** includes the countries of **Estonia, Latvia, and Lithuania,** on the eastern shores of the **Baltic Sea.**
- The Baltic states are bounded on the west and north by the **Baltic Sea,** which gives the region its name, on the east by Russia, on the southeast by Belarus, and on the southwest by Poland and an exclave of Russia.
- The Baltic region is **not rich in natural resources. Though Estonia** is an important producer of **oil shale,** a large share of mineral and energy **resources is imported.**
- **India and Baltic countries** have historical connection and common linguistic roots. The cutting edge technology and innovation ecosystems of the Baltic countries complement India's huge market and appetite for these technologies.

**Balkan Countries**

- The geographic term is used for ten sovereign states: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Macedonia, Montenegro, Romania, Serbia, and Slovenia.
- The region takes its name from the **Balkan Mountain, and Balkan Countries** are found in **Southern Europe.**
- It is a unique territory **inhabited by South Slavs** who form the majority of the population in Balkan Region.
- Region has a very diverse **ethno-linguistic scenario.** The Bulgarians, Macedonians, and Slovenes speak their own Slavic languages, while the Slavs of Serbia, Croatia, Bosnia and Herzegovina, and Montenegro all speak dialects of **Serbo-Croatian.**

## 3.15 Call for Permanent Commission for Israel and Palestinian Areas

Member states of the **Organization of Islamic Cooperation (OIC) are calling on the UN Human Rights Council (UNHRC) to set up a permanent commission** to report **on human rights violations in Israel, Gaza and the West Bank.**

- The move comes in the wake of the **latest surge** in violence in the **Israel-Palestine** conflict.

- **Proposed Permanent Commission:**
    - It will be **an independent, international commission of inquiry appointed by the UNHRC president** to investigate violations of international humanitarian and human rights law in Israel and Palestinian areas.
        - A **commission of inquiry (COI)** is the **highest level of scrutiny** that the **council can authorize.**
        - **Another COI**, for example, has been **regularly reporting on Syria's war** nearly since its inception a decade ago – partially in hopes of collecting evidence that could be used in court one day.
    - The commission **would also investigate** all underlying root causes of recurrent tensions, instability and protraction of conflict including discrimination and repression.
    - **Israel**, backed at times by the United States, **accuses the council of anti-Israel bias** and has generally refused to cooperate with its investigators.
- **Organisation of Islamic Cooperation:**
    - OIC is the **second-largest intergovernmental organization after the United Nations** with a membership of 57 states.
        - **India is not a member of the OIC.** However, India was invited as a **guest of honour at the 46th Session of the Council of Foreign Ministers** in 2019.
    - It **represents the collective voice of the Muslim world.** It works for the protection of the interests of the Muslim world in the spirit of promoting international peace and harmony among various people of the world.
    - It was **established upon a decision of the historical summit** which took place in **Rabat, Kingdom of Morocco**, in **1969.**
    - **Headquarters:** Jeddah, Saudi Arabia.
- **UN Human Rights Council:**
    - An **inter-governmental body within the United Nations system** responsible for strengthening the promotion and protection

of **human rights** around the world.

- The Council was **created by the United Nations General Assembly (UNGA) in 2006.** It **replaced the former United Nations Commission on Human Rights.**
- The **Office of the High Commissioner for Human Rights (OHCHR) serves as the Secretariat** of the Human Rights Council.
    - OHCHR is **headquartered in Geneva, Switzerland.**
- It is made up of **47 United Nations Member States** which are **elected by the UNGA** on the principle of equitable geographical distribution.
    - Members of the Council **serve for a period of three years** and are not eligible for immediate re-election after serving two consecutive terms.
    - **India was elected to the Council** for a period of three years beginning **1st January 2019.**
- **Mechanisms**
    - **Universal Periodic Review: UPR** serves to assess the human rights situations in all United Nations Member States.
    - **UN Special Procedures:** These are made up of **special rapporteurs**, special representatives, independent experts and working groups that monitor, examine, advise and publicly report on thematic issues or human rights situations in specific countries.
- **Recent Developments**
    - The **United States has announced that it would rejoin the UNHRC** that it left in 2018.
    - The Council has **adopted a resolution to scrutinise the gross violations of human rights in Sri Lanka.**

## 3.16 Open Skies Arms Control Pact

Recently, the Biden administration informed Russia that it will **not rejoin Open Skies Arms**

**Control Pact**.

**Open Skies Treaty**

- It is an **accord between over 30 countries** that allows participants to **fly unarmed reconnaissance flights** over any part of their fellow member states.
- The idea was **first proposed in 1955** by former US President Dwight Eisenhower as a means to deescalate tensions during the Cold War.
- The landmark treaty was eventually **signed in 1992 between NATO members** and **former Warsaw Pact countries** following the demise of the Soviet Union.
- It went into **effect in 2002 and had 35 signatories**, including key players US and Russia, along with one non-ratifying member (Kyrgyzstan).
- The OST aims at **building confidence among members** through mutual openness and thus reducing the chances of accidental war.

**Features of Open Skies Treaty**

- Under the treaty, **a member state can "spy" on any part** of the host nation, with the latter's consent.
- A country can **undertake aerial imaging over the host state** after giving notice 72 hours before, and sharing its exact flight path 24 hours before.
- The information gathered, such as on **troop movements, military exercises and missile deployments**, has to be shared with all member states.
- Under the treaty, only approved **imaging equipment is permitted on the surveillance flights**, and officials from the host state can also stay on board throughout the planned journey.

**US left Open Skies Treaty**

- The experts in Washington had for over a decade accused Russia of **non-compliance with OST protocols** and blaming Moscow of obstructing surveillance flights on its territory.
- The US President Donald Trump was also unhappy that a **Russian reconnaissance flew over his golf course** in New Jersey State in 2017.

- In May 2020, the Trump administration announced its **intention of withdrawing from the OST**, accusing Russia of "flagrantly and continuously violating the Treaty in various ways for years".

**New Strategic Arms Reduction Treaty (New START)**

- The **New Strategic Arms Reduction Treaty (New START)** was signed in 2010 in Prague by the United States and Russia and entered into force in 2011.
- It **replaced the 1991 START I treaty**, which expired in 2009, and superseded the 2002 Strategic Offensive Reductions Treaty (SORT).
- The New START is the **first verifiable U.S.-Russian nuclear arms control treaty** to take effect since START I in 1994.
- **Nuclear warhead limit:** The New START limits went into effect that capped deployed strategic nuclear warheads and bombs at 1,550 which is down approximately 30 percent from the 2,200 limit set by SORT.
- **Missile, bomber and launcher limits:** The deployed intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and heavy bombers assigned to nuclear missions are limited to 700.
- The New START **does not limit the number of non-deployed ICBMs and SLBMs**, but it does monitor them and provide for continuous information on their locations and on-site inspections to confirm that they are not added to the deployed force.
- The Treaty **does not place any constraints on the testing, development or deployment** of current or planned U.S. missile defense programs or U.S. long-range conventional strike capabilities.

## 3.17 UAE's Golden Visa

Recently, the Bollywood actor Sanjay Dutt received his **golden visa** from the UAE government.

**UAE's Golden Visa**

- In 2019, the **United Arab Emirates (UAE)** implemented a new system for **long-term residence visas.**
- The visas aimed at **enabling foreigners to live, work and study in the**

**UAE** without the need of a national sponsor and with 100 per cent ownership of their business.

- The 2019 amendment was brought about in a bid to **attract new foreign residents, particularly to the emirate of Dubai,** following the economic upheaval caused by the coronavirus pandemic.

**Benefits provided under Golden Visa**

- It essentially offers **long-term residency (5 and 10 years) to people** belonging to the following groups i.e. investors, entrepreneurs, individuals with outstanding talents.
- The UAE government has made it clear that they are committed to **providing expatriates, investors and essentially everyone looking to make the UAE their home** an extra reason to feel secure about their future.

**Eligibility under UAE's Golden Visa**

- The interested individuals, who would like to apply for the Golden Visa, may do so through the website of the **Federal Authority for Identity and Citizenship.**
- For the 10-year visa, **investors having no less than AED 10 million worth of public investment,** either in the form of an investment fund or a company, can apply.
    - At least **60 per cent of the total investment must not be in the form of real estate** and the invested amount must not be loaned, or in case of assets, investors must assume full ownership.
    - The investor must be able to **retain the investment for a minimum of three years** as well.
- The 10-year long visa may be **extended to include business partners**, providing that each partner contributes AED 10 million.
    - The long-term visa can also include the **holder's spouse and children**, as well as one executive director and one advisor.
- The individuals with specialised talent such as **doctors, researchers, scientists, investors and artists** can also apply for the visa.
    - These individuals may be granted a 10-year visa following **accreditations granted by their respective departments** and fields and the visa will

also be extended to their spouses and children.

- For the 5-year visa, the norms are largely similar for investors with the only difference being the **amount of investment required is set at AED 5 million.**
- The **exceptional high school and university students** are eligible for a 5-year residency visa in the UAE.
    - The high school students who rank top in the country (a minimum grade of 95 per cent) and students from certain universities with a GPA of 3.75 or higher upon graduation are also eligible.
- The foreign nationals who are looking to set up their business in the UAE may also apply for **permanent residency (5 years)** through the Golden Business Visa scheme.

**Note**

- The UAE has also approved an amendment to its residency laws allowing **foreign university students to bring their families** with them to the UAE.
- In October 2020, Dubai also launched a **unique residency programme which permitted overseas working professionals, who were working from home**, to live in the UAE while continuing to serve their employers in their home country.
- In September 2020, the Dubai government also **launched a five-year renewable Retirement Visa for foreigners** aged 55 and over to live in the emirate.
    - The programme, called **Retire in Dubai**, is open to all retirees as long as they earn a monthly income of at least $5,500, have savings of $275,000, or own a property in Dubai worth $550,000.

## 3.18 Currency Swap Agreement

Recently, Bangladesh's central bank has approved a $200 million **currency swap facility** to Sri Lanka.

- It is an agreement in which **two parties exchange the principal amount of a loan and the interest** in one currency for the principal and interest in another currency.
- At the inception of the swap, the **equivalent principal amounts are exchanged** at the spot rate.

- During the length of the swap **each party pays the interest** on the swapped principal loan amount.
- At the end of the swap the **principal amounts are swapped back** at either the prevailing spot rate, or at a pre-agreed rate such as the rate of the original exchange of principals.

**Currency Swap Arrangement between Bangladesh and Sri Lanka**

- Bangladesh Bank has in principle approved a **$200 million currency swap agreement** with Sri Lanka.
- The facility will help **Colombo tide over its foreign exchange crisis.**
- Sri Lanka, staring at an external debt repayment schedule of $4.05 million this year, is in **urgent need of foreign exchange.**
- The two sides have to formalise an agreement to **operationalise the facility** approved by Bangladesh Bank.

**Significance of Currency Swap Agreement**

- A country **provides dollars to a foreign central bank** and also provides the equivalent funds in its currency to the former, based on the market exchange rate at the time of the transaction.
- These swap operations **carry no exchange rate or other market risks**, as transaction terms are set in advance.
- The absence of an exchange rate risk facility **provides the country the flexibility to use these reserves at any time** in order to maintain an appropriate level of balance of payments or short-term liquidity.
- A currency swap is an agreement to **exchange fixed or floating rate payments in one currency** for fixed or floating payments in a second currency plus an exchange of the principal currency amounts.
- The re-denomination from one currency to another currency is done to **lower the borrowing cost for debt** and to hedge exchange risk.
- Currency swap allows a **customer to re-denominate a loan** from one currency to another.

## 3.19 Herero and Nama Genocide

Recently, Germany for the first time has recognised that it had committed **genocide against the Herero and Nama people** in present-day Namibia during its colonial rule over a century ago.

**Herero and Nama Genocide**

- **Germany formally colonized parts of present-day Namibia** i.e. a territory which was roughly twice as large as the European nation, but not as densely populated between 1884 and 1890.
    - By 1903, around **3,000 German settlers had occupied** the central high ground of the region.
- The **tensions quickly rose** as local tribes saw the German settlers as a threat to their land and resources.
- The **conflict reached a boiling point in 1904**, when the Herero nation (a primarily pastoral community) rebelled against the Germans, and were closely followed by the Nama tribe.
- The violence first broke out between **Herero fighters and German settlers** in a small town called Okahandja.
- Lieutenant General Lothar von Trotha had directed his troops to corner the Herero fighters, who had by then fled to the **Waterberg plateau at the edge of the Kalahari Desert.**
- During the **Battle of Waterberg**, around 80,000 Herero, including women and children, were chased across the desert by German troops.
- The **southern Nama communities** had led an insurrection against German colonialism but much like the Herero, they too were brutally suppressed.

**Impact of atrocities on relations between Germany and Namibia**

- The atrocities committed in what was then known as **German South West Africa** have been described by some historians as the first genocide of the 20th century.
- The two countries have been negotiating an agreement in an attempt to "heal the wounds" of the past which was meant to **combine an official apology by**

**Germany** as well as some sort of financial package.

- The aim of the talks was to find a **common path to genuine reconciliation** in memory of the victims.

- In August 2020, **Namibia rejected the reparations offered by Germany**, claiming that their offer was "unacceptable".
    - Germany was also **reluctant to use the term "reparations"** to describe the financial aid they were planning to provide, the southern African nation noted at the time.
- In 2018, as a gesture of goodwill, **Germany returned the human remains of some Herero and Nama tribe members**, which were used during the colonial-era in experiments to assert the superiority of the European race.

**Kalahari Desert**

- It is a **large semi-arid sandy savannah** in Southern Africa.
- It is a **gently undulating, sand-covered plain**, and all of it is 900 metres or more above sea level.
- The **temperatures in the Kalahari Desert are extreme**, with summers being very hot while winter temperatures can go below zero degrees Celsius at night.
- It covers much of **Botswana**, the eastern third of **Namibia** and the northernmost part of the **Northern Cape Province in South Africa.**
- It is the **sixth biggest desert by area** on Earth and the **second biggest in Africa** after the Sahara.

## 3.20 China expanded influence in UN bodies over past decade

According to a study, China has taken numerous steps over the past decade to expand its influence in the United Nations (UN) and related bodies.

- Its mandatory contributions as a UN member rose by 1,096% between 2010 and 2019, while voluntary donations **increased by 346%** from $51 million in 2010 to $172 million in 2019.

**Key Points:**

- China`s main intent was to help set **international standards** in order to boost the **fortunes of Chinese companies**.
- Its mandatory **contributions and voluntary donations** combined made China the **fifth** largest donor to the UN.
- China directly heads **four of 15 principal agencies of the UN** – ITU, UNIDO, Food and Agriculture Organisation (FAO) and International Civil Aviation Organisation (ICAO).
- Chinese deputies are present in nine of these agencies, including the World Bank, International Monetary Fund (IMF), International Maritime Organisation (IMO), United Nations Educational, Scientific and Cultural Organization (UNESCO), and World Health Organization (WHO).

**Recommendations for India:**

- India can take to counter China's moves, including a **more proactive role** as a rule-maker.
- Setting up and leading its **own multilaterals** such as the International Solar Alliance and Coalition for Disaster Resilient Infrastructure.
- **Increasing voluntary contributions** to agencies and bodies.
- **Sponsoring Indian nationals** for influential policy positions in the UN system.

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## 3.21 Israeli strikes in Gaza may be war crimes: UN rights chief

The **UN rights** chief said that Israeli forces may have committed war crimes in the recent **11-day war** with the militant group Hamas that rules the **Gaza Strip.**

- It was also said that **Hamas' indiscriminate rocketing** during the conflict was also a clear violation of the rules of war.

Major Highlights:

- **Air strikes** in such densely populated areas resulted in a **high level of civilian fatalities** and injuries, as well as the widespread destruction of civilian infrastructure.
- The strikes raise serious concerns of **Israel's compliance** with international

humanitarian law.

- Such attacks **may constitute war crimes**, if deemed to be indiscriminate and disproportionate in their impact on civilians.

War Crimes:

- According to the United Nations, a war crime is a **serious breach of international law** committed against civilians or "**enemy combatants**" during an international or domestic armed conflict.
- A war crime occurs when **superfluous injury or unnecessary suffering** is inflicted upon an enemy.
    - The extent of **civilian casualties** resulting is excessive compared to the military advantage gained from the attack.

Geneva Convention:

**Article 147 of the Fourth Geneva Convention** defines war crimes as:

- Wilful killing, torture or inhuman treatment, including wilfully causing great suffering or serious injury to body or health, unlawful deportation or transfer or unlawful confinement of a protected person taking of hostages and extensive destruction and appropriation of property, not justified by military necessity and carried out unlawfully and wantonly.

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## NATIONAL

### 4.1 Putola Nach

Recently, the COVID-19 pandemic has provided an **Assam-based trust** the opportunity to focus on a near-forgotten form of **string puppetry** called **Putola Nach.**

**Putola Nach**

- It is an **ancient popular traditional folk theatrical performance** of Assam.
- The **string puppetry of Assam** is called Putola Nach and is performed in **three areas with distinct characteristics.**
- The Putola Nach is also called **Putola bhaona due to its ancient link (16th**

**century)**with bhaona theatre.

**Areas famous for Putola Nach**

- These areas were **Barpeta-Nalbari in western Assam, Kalaigaon in northern Assam**and **Majuli "island" in eastern Assam.**
- In Lower Assam, the form is known as **Putala-Bhoariya** and influenced by the **popular folk form Bhoariya.**
- In Kalaigaon of Darrang district, the **puppeteers use Bangla, Assamese and Karbi songs** in their performances and borrow largely from the **mobile theatre of Assam (Bhraymaman).**
- It is seen that the puppets of different areas of Assam are divided into **khel-dhemalir Putola (playfull puppets), dhormo khongkrantiyo Putola (religious puppets)** and **nrittor Putola (dancing puppets)** etc.

**Viewpoints of historians on Putola Nach**

- The scholar critics pull the history of Putola Naach (puppetry) to the society of the **Stone Age people of pre-historic era.**
- It mentioned in the **manuscript of Kothagurucharitra** that on the twenty second day after the birth of Sankardev, his father Kusumbor Bhuya arranged Saya Putola performance.

## 4.2 Ayush-64

Recently, the **polyherbal drug AYUSH-64** which was originally developed in 1980 for treatment of malaria, has now been **repurposed for Covid 19.**

**Ayush-64**

- It is an **Ayurvedic formulation**, developed by the **Central Council for Research in Ayurvedic Sciences (CCRAS).**
- It was **originally developed in 1980** for the management of **Malaria.**
- The in-silico study done on Ayush 64 showed that 35 out of 36 of its Phyto-constituents have **high binding affinity against COVID 19 virus**.
- Ayush 64 has been identified as a **potential adjunct to standard care in the**

**management** of asymptomatic, mild and moderate COVID 19 to improve the clinical recovery and quality of life.

**Effectiveness of Ayush 64**

- Its efficacy was scientifically studied in **asymptomatic, mild and moderate disease**without risk factors for poor outcome and those not requiring emergency interventions or hospitalization.
- The patients of **mild to moderate COVID-19 cases showing initial symptoms** like fever, malaise, body ache, nasal congestion, nasal discharge, headache, cough etc. and of asymptomatic cases of COVID-19 can **start taking Ayush 64 within 7 days of diagnosis.**
- It can be taken as a **standalone treatment in mild cases under the supervision of an Ayurvedic physician**, provided there is availability of appropriate referral facilities.

**Central Council for Research in Ayurvedic Sciences (CCRAS)**

- It is an **autonomous body** of the Ministry of AYUSH.
- It is an apex body in India for the **formulation, coordination, development and promotion of research** on scientific lines in Ayurveda and Sowa-Rigpa system of medicine.
- The research activities of the Council include **Medicinal Plant Research, Drug Standardization, Pharmacological Research, Clinical Research, Literary Research & Documentation** and **Tribal Health Care Research Programme.**

## 4.3 Oath by Chief Minister

Recently, Mamata Banerjee takes oath as **Bengal Chief Minister.**

**Appointments of Chief Minister**

- The Constitution **does not contain any specific procedure** for the selection and appointment of the Chief Minister.
    - **Article 164** only says that the **Chief Minister shall be appointed by the governor.**

- In accordance with the **convections of the parliamentary system of government**, the governor has to appoint the leader of the majority party in the state legislative assembly as the Chief Minister.
- When no party has a clear majority in the assembly, then **the governor may exercise his personal discretion** in the selection and appointment of the Chief Minister.
- The governor usually appoints the **leader of the largest party or coalition in the assembly as the Chief Minister** and asks him to seek a vote of confidence in the House within a month.
- The Constitution **does not require that a person must prove his majority** in the legislative assembly **before he is appointed** as the Chief Minister.
- A person who is not a member of the state legislature can be appointed as Chief Minister for six months, within which time, he should be elected to the state legislature, failing which he ceases to be the Chief Minister.

**Oath by Chief Minister**

- Before the Chief Minister enters his office, the **governor administers to him the oaths of office and secrecy.**
- In his **oath of office**, the Chief Minister swears:
    - to bear true faith and allegiance to the Constitution of India,
    - to uphold the sovereignty and integrity of India,
    - to faithfully and conscientiously discharge the duties of his office, and
    - to do right to all manner of people in accordance with the Constitution and the law, without fear or favour, affection or ill-will.

**Term of Chief Minister**

- The term of the Chief Minister is **not fixed** and he holds office during the **pleasure of the governor.**
    - It **does not imply** that the governor can dismiss him at any time.
- He **cannot be dismissed by the governor** as long as he enjoys the majority support in the legislative assembly.

## 4.4 Supreme Court quashes reservation law for Maratha community

Recently, the **Supreme Court has quashed the Maharashtra law granting reservation to the Maratha community** in admissions and government jobs in the state.

**Arguments of Supreme Court**

- It made it clear in its judgment that people from the **Maratha community cannot be declared as educationally and socially backward community** to bring them within the reserved category.
- The court **refused to refer the 1992 Mandal judgment (Sawhney judgment)**, setting a 50 per cent cap on reservation, to a larger bench for reconsideration.
- The court ruled that the **state government had not made any extraordinary circumstance** to grant such reservation.
- The bench also **upheld the 102nd constitutional amendment** saying it does not violate the basic structure of the constitution.

**Powers 102nd Amendment gives**

- The amendment that **gave powers to the President** to notify socially and educationally backward classes (SEBC).
- The 102nd amendment **deals with the constitutional status** of the National Commission for Backward Classes.
- The power of the Parliament to **change the SEBC list was not to take away the powers of the state**, but was fulfilling a long-held demand for constitutional status to the National Commission on Backward Classes (NCBC).
- It allows the commission to **appropriately examine implementation of reservation given to OBCs** in services and education.

## 4.5 Puducherry becomes 'Har Ghar Jal' UT is in the news

Recently, **Puducherry** has become **'Har Ghar Jal' UT** by ensuring that every rural home in the Union Territory gets a household tap connection.

- The UT becomes the fourth State/UT after **Goa, Telangana and Andaman &**

**Nicobar Islands** to provide assured tap water supply to every rural home under Jal Jeevan Mission.

**Jal Jeevan Mission (JJM)**

- Its objective is to supply **55 litres of water per person per day to every rural household** through Functional Household Tap Connections by 2024.
- Under this mission, the **creation of local infrastructure for source sustainability**measures as mandatory elements, like rainwater harvesting, groundwater recharge and management of household wastewater for reuse, would be undertaken.
- Jal Jeevan Mission is based on a **community approach and includes extensive Information**, Education and Communication as a key component.
- The fund sharing pattern between the Centre and states is **90:10 for Himalayan and North-Eastern States, 50:50 for other states, and 100% for Union Territories.**
- For the implementation of JJM, following **institutional arrangement** has been proposed:
    - National Jal Jeevan Mission at the Central level;
    - State Water and Sanitation Mission (SWSM) at State level;
    - District Water and Sanitation Mission (DWSM) at the district level; and
    - Gram Panchayat and/ or its sub-committees i.e. Village Water Sanitation Committee (VWSC)/ Paani Samiti at village Level.

**Key Features of Jal Jeevan Mission-Urban (JJM-U)**

- The mission is the India's 12th attempt to **connect every household with tap water** and the **target year is 2024.**
- The government has announced an **outlay of Rs 50,011 crore for this scheme**, about 4.5 times the revised budget for 2020-2021.
- Nearly 2.68 crore is the estimated gap in **urban household tap connections** which is being proposed under Jal Jeevan Mission – Urban.
- Pey Jal Survekshan will be conducted in cities to **ascertain equitable distribution of water, reuse of wastewater and mapping of water bodies** with respect to

quantity and quality of water through a challenge process.

- In order to promote Public private partnership, it has been mandated for **cities having million plus population to take up PPP projects** worth minimum of 10 percent of their total project fund allocation.
- The **share of funding** from the Centre is:
    - For Union Territories, there will be 100% central funding;
    - For North Eastern and Hill States, central funding for projects will be 90%;
    - Central funding will be 50% for cities will less than 1 lakh population, one third for cities with 1 lakh to 10 lakh population; and
    - 25% for cities with million plus population

## 4.6 Media has Right to Report Court Proceeding: SC

Recently, the **Supreme Court (SC)** dismissed a plea by the **Election Commission of India (ECI)** to restrain media from reporting oral observations of the judges.

- The SC ruled that the **media has rights to report observations** made during the course of hearings (Court Proceedings).
- **Freedom of Speech:**
    - Real-time reportage of court proceedings, including the **oral exchanges in courtrooms** between judges and lawyers, **is part of the right to freedom of speech.**
        - Under **Article 19**, Indian Constitution guarantees **Freedom of Speech and Expression.**
    - With the advent of technology, **reporting has proliferated through social media forums**, which provides real-time updates to a much wider audience. This is an **extension of the freedom of speech and expression that the media possesses.**
        - This constitutes **a virtual extension of the open court.**
    - **Except in cases of child sexual abuse and marital issues**, the phenomenon of free press should extend to court proceedings.

- **Judicial Integrity:**
    - **Right of the media to report** and disseminate issues and events, including court proceedings that **were a part of the public domain, augmented the integrity of the judiciary.**
- **Functionality of Open Court Proceeding:**
    - Ensures that the **judicial process is subject to public scrutiny** which in turn is **crucial to maintaining transparency and accountability** and transparency in the functioning of democratic institutions is **crucial to establish the public's faith in them.**
    - Ensures that **judges act in accordance with law and with probity.**
    - Court proceedings are **vital sources of public information** about the activities of the legislature and the executive. An open court serves an **educational purpose** as well becoming a **platform for citizens to know how the practical application of the law impacts upon their rights.**
- **Language:**
    - There is a **need for judges to exercise caution in off-the-cuff remarks in open court**, which may be susceptible to misinterpretation. **Language**, both on the Bench and in judgments, **must comport with judicial propriety.**
        - Language is an **important instrument of a judicial process which is sensitive to constitutional values.**

**Election Commission of India**

- It is an **autonomous constitutional authority** responsible for administering Union and State election processes in India.
- It was established in accordance with the constitution on **25th January 1950 (celebrated as national voters' day).** The secretariat of the commission is located in New Delhi.
- The body **administers elections to the Lok Sabha, Rajya Sabha, and State Legislative Assemblies in India, and the offices of the President and Vice President in the country.**

- It is **not concerned with the elections to panchayats and municipalities** in the states. For this, the Constitution of India provides for a separate **State Election Commission.**

- **Constitutional Provisions:**
  - **Part XV (Article 324-329)** of the Indian Constitution deals with elections, and establishes a commission for these matters.

## 4.7 PM Modi pays tributes to Tagore, Gokhale, Maharana Pratap

### 1. Gopal Krishna Gokhale

The Prime Minister of India paid tribute to Gopal Krishna Gokhale on his Jayanti.

- Gopal Krishna Gokhale was a great social reformer and educationist who provided exemplary leadership to India's freedom movement.
- **Birth:** 9th May, 1866 in Kotluk village in present-day Maharashtra (then part of the Bombay Presidency).
- **Ideology:**
  - Gokhale worked towards social empowerment, expansion of education , struggle for freedom in India for three decades and rejected the use of reactionary or revolutionary ways.
- **Role in Colonial Legislatures:**
  - **Between 1899 and 1902,** he was a member of the **Bombay Legislative Council** followed by work at the **Imperial Legislative Council from 1902** till his **death (1915).**
  - At the Imperial legislature, Gokhale played a key role in framing the **Morley-Minto reforms of 1909.**
- **Role in INC:**
  - He was **associated with the Moderate Group of Indian National Congress (joined in 1889).**
  - He became **president of INC in 1905 in Banaras session.**
    - This was the time when bitter differences had arisen between his

group of **'Moderates' and the 'Extremists'** led by **Lala Lajpat Rai** and **Bal Gangadhar Tilak** among others. The two factions **split at the Surat session of 1907.**

- Despite the ideological difference, **in 1907,** he intensely **campaigned for the release of Lala Lajpat Rai,** who was imprisoned that year by the British at Mandalay in present-day Myanmar.

- **Related Societies and Other Works:**
  - He **established the Servants of India Society in 1905** for the expansion of Indian education.
  - He was **also associated with the Sarvajanik sabha journal** started by Govind Ranade.
  - In 1908, Gokhale **founded the Ranade Institute of Economics.**
  - He started english weekly newspaper, **The Hitavada** (The people's paper).
- **Mentor to Gandhi:**
  - As a liberal nationalist, he is **regarded by Mahatma Gandhi as his political guru.**
  - Gandhi wrote a book in Gujarati dedicated to the leader titled **'Dharmatma Gokhale'.**

**Morley-Minto Reforms 1909**

- The reforms included the **admission of Indians to the Secretary of State's council, to the viceroy's executive council,** and to the executive councils of Bombay and Madras, and the **introduction of an elected element into legislative councils** with provision for **separate electorates for Muslims.**
  - The reforms were regarded by Indian nationalists as too cautious, and the provision of separate electorates for Muslims was resented by Hindu.
- The **legislative councils** at the **Centre and the provinces** were increased in size.
  - The Act increased the maximum **additional membership of the Imperial Legislative Council from 16 to 60.**
- The legislative councils at the Centre and the provinces were to have **four**

**categories of members** as follows:

- **Ex officio members:** Governor-General and members of the executive council.
- **Nominated official members:** Government officials who were nominated by the Governor-General.
- **Nominated non-official members:** Nominated by the Governor-General but were not government officials.
- **Elected members:** Elected by different categories of Indians.
    - The elected members were **elected indirectly.**

- **Indians were given membership** to the Imperial Legislative Council for the **first time.**
- It introduced **separate electorates for the Muslims.**
    - Some constituencies were earmarked for Muslims and only Muslims could vote for their representatives.
- **Satyendra P Sinha** was appointed the first Indian member of the **Viceroy's Executive Council.**

**2. Rabindranath Tagore**

The Prime Minister paid tribute to **Gurudev Rabindranath Tagore** on **160th Jayanti** on 7th May, 2021.

- He was born in **Calcutta on 7th May 1861.**
    - He was also referred to as **'Gurudev', 'Kabiguru',** and **'Biswakabi'**
    - He is regarded as the outstanding creative artist of modern India and hailed by W.B Yeats, Rabindranath Tagore was a**Bengali poet, novelist, and painter,** who was highly influential in introducing Indian culture to the west.
    - He was an exceptional **literary figure and a renowned polymath** who singlehandedly reshaped the region's literature and music.
    - He was a **good friend of Mahatma Gandhi** and is said to

have **given him the title of Mahatma.**

- He had always stressed that **unity in diversity** is the only possible way for India's national integration.
- He had spoken at the **World Parliament for Religions in the years 1929 and 1937.**

- **Contributions:**
  - He is said to have **composed over 2000 songs** and his songs and music are called **'Rabindra Sangeet'** with its own distinct lyrical and fluid style.
  - He is responsible for modernising Bengali prose and poetry. His notable works include **Gitanjali, Ghare-Baire, Gora, Manasi, Balaka, Sonar Tori,** He is also remembered for his song **'Ekla Chalo Re'.**
    - He published his first poems aged 16 under the pen-name **'Bhanusimha'.**
  - He not only gave the **national anthems for two countries, India and Bangladesh,** but also **inspired a Ceylonese student of his, to pen and compose the national anthem of Sri Lanka.**
  - Besides all his literary achievements he was also a philosopher and educationist who in **1921 established the Vishwa-Bharati University,** a university that challenged conventional education.
- **Awards:**
  - In **1913** he was awarded the **Nobel Prize in Literature** for his work on Gitanjali.
    - He was the **first non-European** to receive the Nobel Prize.
  - In 1915 he was awarded **knighthood** by the British King George V. In 1919, following the **Jallianwalla Bagh massacre**he renounced his Knighthood.
    - He died on **7th August 1941 in Calcutta.**

**3. Maharana Pratap**

The Prime Minister of India paid tributes to Maharana Pratap on his Jayanti.

- **Description:**
    - **Rana Pratap Singh** also known as **Maharana Pratap** was born on **9th May 1540** in **Kumbhalgarh, Rajasthan.**
    - He was the **13th King of Mewar** and was the eldest **son of Udai Singh II**
        - Maharana Udai Singh II ruled the kingdom of Mewar, with his capital at Chittor.
        - Udai Singh II was also a founder of the city of Udaipur (Rajasthan).
- **Battle of Haldighati:**
    - The Battle of Haldighati was **fought in 1576 between Rana Pratap Singh of Mewar and Raja Man Singh of Amber** who was the general of the Mughal emperor Akbar.
    - Maharana Pratap fought a brave war, but was **defeated by Mughal forces.**
    - It is said that **Maharana Pratap's loyal horse named Chetak**, gave up his life as the Maharana was leaving the battlefield.
- **Reconquest:**
    - **After 1579**, the Mughal pressure relaxed over Mewar and Pratap recovered Western Mewar including Kumbhalgarh, Udaipur and Gogunda.
    - During this period, he also built **a new capital, Chavand**, near modern Dungarpur.
        - He died on 19th January, 1597. He was **succeeded by his son Amar Singh**, who submitted in 1614 to Emperor Jahāngīr, son of Akbar.

## 4.8 Tocilizumab

Recently, the **Ministry of Chemicals & Fertilizers** has announced that additional 45000 vials of **Tocilizumab** have been allocated to States/UTs to meet the increased demand across country.

- It is an i**nterleukin-6 (IL-6) receptor antagonist.**
- It is a biological therapy and can be prescribed for **rheumatoid arthritis, juvenile idiopathic arthritis (JIA) or giant cell arteritis.**
- It is a **recombinant humanized monoclonal antibody IL-6 receptor inhibitor** used to treat inflammatory and autoimmune conditions.
- Tocilizumab has a **long duration of action** as it is generally given every 4 weeks and has a wide therapeutic index.
- Tocilizumab **binds soluble and membrane bound IL-6 receptors**, preventing IL-6 mediated inflammation.

**What is Interleukin 6 (IL-6)?**

- It is a **pro-inflammatory cytokine** produced by cells including **T-cells, B-cells, lymphocytes, monocytes, fibroblasts.**
- It rapidly induces **C-reactive protein, serum amyloid A, fibrinogen, haptoglobin, and α-1-antichymotrypsin** while inhibiting production of fibronectin, albumin, and transferrin.
- It induces **antibody production, induces cytotoxic T-cell differentiation** and **inhibits regulatory T-cell differentiation**.

IAS ACADEMY

## 4.9 IREDA bags Green Urja Award

Recently, the **Indian Renewable Energy Development Agency Ltd (IREDA)** has been conferred with **"Green Urja Award".**

**IREDA**

- It is the only dedicated institution for **financing Renewable Energy (RE) & Energy Efficiency (EE) projects** in India.
- It is under the administrative control of **Ministry of New & Renewable Energy (MNRE).**
- It has played a catalytic role in **developing market for financing RE & EE projects**.
- It is a **Mini Ratna (Category – I)** Government of India Enterprise.

- It is a **Public Limited Government Company** established as a **Non-Banking Financial Institution** in 1987.
- It has been notified as a **"Public Financial Institution"** under section 4 'A' of the **Companies Act, 1956.**
- It is registered as **Non-Banking Financial Company (NFBC)** with **Reserve Bank of India (RBI).**

**Objectives of IREDA**

- To give **financial support to specific projects and schemes** for generating electricity and / or energy through new and renewable sources and conserving energy through energy efficiency.
- To maintain its position as a **leading organisation to provide efficient and effective financing** in renewable energy and energy efficiency / conservation projects.
- To increase **IREDA`s share in the renewable energy sector** by way of innovative financing.
- Improvement in the **efficiency of services provided to customers** through continual improvement of systems, processes and resources.
- To strive to be **competitive institution** through customer satisfaction.

**Why IREDA received Green Urja Award?**

- The Green Urja Award is given by **Indian Chamber of Commerce (ICC)**.
- It has been awarded for being the **Leading Public Institution in Financing Institution**for Renewable Energy.
- It gets the award for the **pivotal and developmental role** it plays in **Green Energy Financing.**
- The award recognises its **immense contribution in development of Renewable Energy Sector** in line with the Prime Minister's vision of Atma Nirbhar Bharat.
- IREDA has ended the year 2020-21 ended on a **strong note and disbursed the second highest amount of loan**, which indicates that it has the ability to translate this problem into an opportunity.

**Indian Chamber of Commerce (ICC)**

- It is the leading and only **National Chamber of Commerce** founded in 1925.
- It was set up by a group of pioneering industrialists led by **Mr. G D Birla.**
- It is considered as the **first organised voice of indigenous Indian Industry.**
- It is the **only Chamber from India** to win the first prize in **World Chambers Competition in Quebec, Canada.**

## 4.10 SEBI pitches for bringing in 'person in control' concept

Recently, the **Securities and Exchange Board of India (SEBI)** has proposed doing away with the **concept of promoters** and moving to **'person in control.**

**Key Highlights**

- It has also suggested **reducing the minimum lock-in periods** post a public issue for promoters and pre-IPO shareholders.
- The consultation paper suggested that a **three-year transition period** for moving from the promoter to person in control concept.
- The SEBI has proposed that if the target of the problem includes provide on the market or financing aside from for capital expenditure for a challenge, then the **minimal promoters' contribution of 20% must be locked-in for one year** from the date of allotment.
- The promoters' holding in excess of minimum promoters' contribution shall be **locked in for a period of six months** as opposed to the existing requirement of one year from the date of allotment in the IPO.

**Person in control concept**

- Control Person means any person that **holds a sufficient number of any of the securities of an issuer** so as to affect materially the control of that issuer, or that holds more than 20% of the outstanding voting securities of an issuer.
- Control Person means any individual who has a **Control relationship with the Fund or an investment adviser** of the Fund.
- Control Person means a **director or executive officer of a licensee or a person**

**who has the authority** to participate in the direction, directly or indirectly through 1 or more other persons, of the management or policies of a licensee.

**Significance of Person in Control Concept**

- The changes in **nature of ownership, could lead to situations where the persons with no controlling rights and minority** shareholding continues to be classified as a promoter.
- It will **lighten the disclosure burden** for firms.
- The regulator has proposed to **eliminate the present definition of promoter group**because it would rationalise the disclosure burden and produce it according to the put up itemizing disclosure requirement.

**Need for Person in Control Concept**

- It is necessitated by the **changing investor landscape in India** where concentration of ownership and controlling rights do not vest completely in the hands of the promoters or promoter group.
- It is because of the **emergence of new shareholders** such as private equity and institutional investors.
- The investor focus on the **quality of board and management has increased**, thereby reducing the relevance of the concept of promoter.
- It also suggested **doing away with the current definition of promoter group** since it focuses on capturing holdings by a common group of individuals.
- It often results in **capturing unrelated companies** with common financial investors.

## 4.11 Article 311 (2) of the Indian Constitution

Recently, the suspended police officer Sachin Waze was dismissed from service by Mumbai Police Commissioner under **Article 311 (2) (b)** without a departmental enquiry.

**Provision of Article 311 of the Constitution**

- Article 311 provides **two safeguards to civil servants against any arbitrary dismissal**from their posts:

- A civil servant **cannot be dismissed or removed by an authority subordinate** to that by which he was appointed.
- A civil servant **cannot be dismissed or removed or reduced in rank except after an inquiry** in which he has been informed of the charges against him and given a reasonable opportunity of being heard in respect of those charges.

- The above two safeguards are **available only to the members of the civil services** of the Centre, the all-India services, the civil services of a state or to persons holding civil posts under the Centre or a state.
  - It is **not available** to the members of **defence services or persons holding military posts.**
- The second safeguard of holding inquiry is **not available** in the following three cases:
  - Where a civil servant is **dismissed or removed or reduced in rank on the ground of conduct** which has led to his **conviction on a criminal charge;** or
  - Article 311 (2) (b) Where the **authority empowered to dismiss or remove a civil servant or to reduce him in rank is satisfied** that for some reason (to be recorded in writing), it is not reasonably practicable to hold such inquiry; or
  - Where the **president or the governor is satisfied** that in the interest of the security of the state, it is not expedient to hold such inquiry.

**What is the process of a departmental enquiry?**

- In a departmental enquiry, after an enquiry officer is appointed, the **civil servant is given a formal chargesheet** of the charges.
- The civil servant can **represent himself/herself or choose to have a lawyer.**
- The witnesses can be called during the **departmental enquiry** following which the enquiry officer can prepare a report and submit it to the government for further action.

**Can the dismissal under section 311 (2) be challenged by the government employee?**

- The government employee dismissed under these provisions can approach

either **tribunals like the state administrative tribunal or Central Administrative Tribunal (CAT) or the courts.**

## 4.12 State of Healthcare in India Report

Recently, the real estate portal, which is owned by **US-based News Corp** and its**Australian group firm REA,** has released its report titled **'State of Healthcare in India'.**

**Key Highlights**

- The report **ranks health infrastructure in India's most urbanised eight cities** on the basis of Housing.com's City Health Card.
    - The eight cities are **Ahmedabad, Bengaluru, Chennai, Delhi-NCR, Hyderabad, Kolkata, Mumbai Metropolitan Region (MMR) and Pune.**
- These rankings are benchmarked against parameters such as **number of hospital beds per 1,000 people, air quality, water quality, sanitation and liveability index.**
    - **40 per cent weightage** has been given to number of hospital beds.
- In the public healthcare system, **only half a bed and 1.4 beds are available** if we count public plus private hospital beds available per 1,000 people in India.
- India also has the **lowest number of doctors (0.86) per 1,000 people** while other major economies have between 2-4 doctors per 1,000 people.

**Performance of Cities under State of Healthcare in India Report**

- **Pune is ranked first** while **Delhi-NCR is at the lowest position** among eight major cities in health infrastructure-related parameters.
    - Pune is the most equipped city in India, offering **3.5 hospital beds per 1,000 people**.
    - The top-ranked city Pune also scored **significantly high on parameters** such as ease of living, water quality, and performance and sustainable initiatives taken by its local government.
- **Bengaluru is ranked third** despite a high number of hospital beds per 1,000 people

and its top ranking in the ease of living index.

- The city's score on parameters such as **air quality, water quality and availability, and municipal performance index** pulled down its ranking.

- **Delhi-NCR,** which covers the national capital, **Gurugram, Faridabad, Noida, Greater Noida and Ghaziabad**, was ranked the lowest in the list.
    - It is primarily because of the **region's poor scores on air and water quality, sanitation and performance of municipal bodies.**
    - The density of hospitals is lower in **Ghaziabad and Greater Noida** regions compared to Gurugram, Noida and Faridabad.
- **Mumbai Metropolitan Region ranks fourth** on the Housing.com's City Health Card, with parameters such as the number of beds, air quality, and liveability pulling its overall score down.
- **Hyderabad, Chennai and Kolkata** occupy the fifth, sixth and seventh positions, respectively.

**Recommendations under the report**

- India, which is the **third-largest economy in Asia**, needs to significantly increase its spending on healthcare.
- India needs to focus on **building quality healthcare infrastructure**.
- The states should come up with more reformative measures to **ensure a larger number of its citizens are able to afford housing**, which acts as a preventive measure against health risks.

## 4.13 Remittances received by India

Recently, the World Bank has released the **Migration and Development Brief** which provides information regarding remittances received by various countries.

**Key Highlights**

- India received over **USD 83 billion in remittances in 2020** which is a **drop of just 0.2 per cent** from the previous year.
    - The report said **India's remittances fell by just 0.2 per cent i**n 2020,

with much of the decline due to a 17 per cent drop in remittances from the United Arab Emirates.

- Remittances **outflow from India** in 2020 was **USD7 billion**, against **USD 7.5 billion** in 2019

- China received **USD 59.5 billion in remittances in 2020** against USD 68.3 billion the previous year.
- India and China are followed by **Mexico** (USD42.8 billion), **the Philippines** (USD34.9 billion), **Egypt** (USD29.6 billion), **Pakistan** (USD26 billion), **France** (USD24.4 billion) and **Bangladesh** (USD21 billion).
- In neighbouring Pakistan, **remittances rose by about 17 per cent**, with the biggest growth coming from Saudi Arabia, followed by the European Union countries and the United Arab Emirates.
- In Bangladesh, remittances also showed a **brisk uptick in 2020 (18.4 per cent**), and Sri Lanka witnessed remittance growth of 5.8 per cent.
    - In contrast, remittances to **Nepal fell by about two per cent**, reflecting a 17 per cent decline in the first quarter of 2020.
- The officially recorded remittance flows to **low- and middle-income countries reached USD540 billion in 202**0, just 1.6 per cent below the 2019 total.
- The remittance **inflows rose in Latin America and the Caribbean** (6.5 per cent), South Asia (5.2 per cent) and the Middle East and North Africa (2.3 per cent).
- It fell for **East Asia and the Pacific (7.9 per cent), for Europe and Central Asia (9.7 per cent)**, and for Sub-Saharan Africa (12.5 per cent).
- The decline in flows to Sub-Saharan Africa was almost entirely due to a **28 per cent decline in remittance flows to Nigeria.**
- The remittance outflow was the maximum from the **United States** (USD68 billion), followed by **UAE** (USD43 billion), **Saudi Arabia** (USD34.5 billion), **Switzerland (USD27.9 billion), Germany (USD22 billion), and China (**USD18 billion).

**What are Remittances?**

- Remittances are funds **transferred from migrants** to their home country.
- They are the **private savings of workers and families that are spent in the home country** for food, clothing and other expenditures, and which drive the home

economy.

- A typical remittance transaction takes place in three steps:
    - The migrant sender **pays the remittance to the sending agent** using cash, check, money order, credit card, debit card, or a debit instruction sent by e-mail, phone, or through the Internet.
    - The sending agency **instructs its agent in the recipient's country** to deliver the remittance.
    - The **paying agent makes the payment** to the beneficiary.
- The remittance flows tend to be more stable than capital flows, and they **tend to be countercyclical** i.e. increasing during economic downturns or after a natural disaster when private capital flows tend to decrease.

## 4.14 Dongria Kondh Tribe

Recently, the first cases of coronavirus infection have been reported among the **Dongria Kondh tribe** which has sparked concern among the administration of Odisha.

**Dongria Kondh Tribe**

- It is settled in the **Niyamgiri hills** of Rayagada district in **Odisha.**
    - Niyamgiri is an area of **densely forested hills, deep gorges and cascading streams.**
- It is one of the **particularly vulnerable tribal groups (PVTGs)** in India.
- They derive their name from **dongar, meaning 'hill'** and the name for themselves is **Jharnia: protector of streams.**
- The Dongria have distinctive **jewellery, tattoos and hairstyles.**
    - Women wear many **rings through their ears** and **three through their noses**, while boys wear two nose rings.
    - Dongria girls wear **clips in their hair and rings and beads** around their necks.
- The Dongria also cultivate orchards in the forest, producing crops such as **oranges, bananas, ginger, sweet papaya and the aromatic resin jhunu.**

- The Dongria believe that **animals, plants, mountains and other specific sites and streams have a life-force or soul, jela**, which comes from the mother goddess.

## 4.15 Basava Jayanti

Recently, the Prime Minister Shri Narendra Modi has bowed to **Jagadguru Basaveshwara**on **'Basava Jayanti'**.

**Basava Jayanti**

- It is a **regional government holiday** in the **Indian state of Karnataka** on the third day of Shukla Paksha (18th day) in the month of **Vaisakha.**
- It is **traditionally observed by the Lingayats** in the Indian state of Karnataka.
- It marks the **birth anniversary of Basavanna**, a 12th-century poet-philosopher who was the founding saint of the Lingayat sect.
- The **Lingayats are a Hindu sect** with a wide following in southern India that worships Shiva as the only deity.
- It is celebrated by Lingayats majorly in **Karnataka, Andhra Pradesh, Telangana and Maharashtra.**

**Basavanna**

- Basavanna was born in **1105 CE in the northern part of Karnataka**, to a Kannada family devoted to Hindu deity Shiva.
- Basava helped to **spread the Lingayat sect by teaching** and by dispersing funds to Lingayat guilds.
- Several important Lingayat works are credited to Basavanna, including Vachana such as the **Shat-sthala-vachana, Kala-jnana-vachana, Mantra-gopya, Ghatachakra-vachana** and **Raja-yoga-vachana.**
- Basavanna believed that **every human being was equal, irrespective of caste** and that all forms of manual labour were equally important.
- Basava advocated the **wearing of a necklace with a pendant** that contains a small votary object symbolizing Shiva called a Linga, from which the Lingayats get their name.

- Basavanna also holds the distinction of being the **first Kannadiga to have a commemorative coin**, which was minted in recognition of his social reforms.

## 4.16 COVID-19 survivors' tales | Hakki-Pikki tribal from Karnataka

Recently, some people of the **HakkiPikki** Tribe survived **Covid-19** in **Karnataka.**

- The HakkiPikki tribes are semi nomadic tribal people, have **four clans** namely the **Gujrathioa, Kaliwala, Mewara and Panwara.**
- They speak many **south Indian languages** such as **Kannada, Tamil, Telugu and Malayalam** along with **Vagribooli which is similar to Guajarati.**
- The HakkiPikki, **meaning "bird catchers"** in Kannada.
- It is a **Scheduled Tribe** in Karnataka.

- **Origin and History:**
  - The origin of HakkiPikki tribal communities has a rich history and is said to be an ancestral relation with the legendary **Ranapratap Singh.**
  - The HakkiPikki tribal community are a **Kshatriya or warrior tribal community** who had to migrate to southern India after their defeat with Mughal kings.

## 4.17 NAIMISHA 2021

Recently, the **Ministry of Culture** has announced a month-long online programme called **NAIMISHA 2021.**

- It is an **online summer programme** of the **National Gallery of Modern Art (NGMA).**
- It is aimed at creating a **virtual museum space** by NGMA.
- The planned workshops and hosts of related events are expected to **spark imagination, creativity and interest** in visual and other related arts.
- The idea behind designing and delivering online interactive programmes is

to **provide a creative outlet to children**, and indeed all interested adults.

- The NGMA NAIMISHA portal will also stream a **curated film festival for the participants** from NGMA's private collection.
- The exhibition of selected artworks from NAIMISHA 2021 will be displayed on **NGMA's website and SO-HAM platform.**

**SO-HAM Platform**

- It is the **first cultural media platform** in the country.
- It is under the banner of **National Gallery of Modern Art (NGMA).**
- It is a platform to **develop a dialog** between NGMA, artists and art enthusiasts.
- '**So Ham'** symbolises **"Universal Self (Paramhansa) Reflected as Individual Self (Hamsa) in all of us"**.
  - It implies that **He I (am) and I am He.**

## 4.18 Deadline for Opening FCRA Accounts

Recently, the **Delhi High Court** has asked the Union Home Ministry to consider whether the April 1 deadline for opening **Foreign Contribution (Regulation) Act (FCRA) account for NGOs** can be extended in view of the COVID19 pandemic.

- In 2020, the new amendment says that the **NGOs that receive foreign contributions are required to open an FCRA account** in the New Delhi branch of the SBI.
- The NGOs have sought an extension for the April 1 deadline by a period of six months and a direction to the Ministry to **grant FC6C certificates to the NGOs** in an expeditious manner.

**Foreign Contribution (Regulation) Act (FCRA)**

- The Foreign Contribution Regulation Act, 2010, requires the **opening of a designated FCRA account,** which is an exclusive account in which foreign contribution is to be received.
- The FCRA Amendment Act of 2020 was then promulgated which **amended Section 17.**

- It now requires that a **primary FCRA account for any organization in India** needs to be exclusively opened with State Bank of India, New Delhi.

- The FCRA **regulates foreign donations** and ensures that such contributions do not adversely affect the internal security of the country.
- The Act, **first enacted in 1976**, was amended in the year 2010, when a slew of new measures were taken by the Union Home Ministry to regulate foreign donations.
- The Act is **applicable to all associations, groups and non-governmental organisations (NGOs)** who intend to receive foreign donations.
- The organisation that wants to **register itself** under FCRA:
    - shall be in **existence for three years** and
    - should have spent a **minimum amount of ₹15 lakh** on its core activities for the benefit of society during the last three financial years.
- The registration is **initially valid for five years** and it can be renewed subsequently if they comply with all norms.
- The Members of the **legislature and political parties, government officials, judges and media persons** are prohibited from receiving any foreign contribution.
- In 2017 the MHA, through the Finance Bill route, amended the 1976-repealed FCRA law paving the way for **political parties to receive funds from the Indian subsidiary of a foreign company** or a foreign company in which an Indian holds 50% or more shares.

**Eligibility to open FCRA accounts in India**

- In order to be eligible for the **normal registration**, there are a few prerequisites:
    - The applicant must be registered under the **Societies Registration Act, 1860 or the Indian Trusts Act, 1882 or registered as Section 8 Company as per the Companies Act, 2013** or any such Act as may be required.
    - Must have made **reasonable contributions** by undertaking activities in its chosen field for the benefit of society.
    - Must have **spent a minimum of Rs. 10 lakhs in the last 3 years** towards achieving its objectives (Excludes administrative expenditure).

- Must submit the **copies of the financial statements of the last 3 years** that are duly audited by qualified Chartered Accountants.

## 4.19 Indian Language Learning App

Recently, the Ministry of Electronics & Information Technology has launched a challenge for creating **Indian Language Learning App**.

- It is an initiative of **MyGov** in partnership with **Department of Higher Education.**
- It has been launched to take forward Prime Minister Narendra Modi's vision of **celebrating India's cultural diversity** through greater interaction among its constituent parts.
- It aims to create an app that will enable individuals to **learn simple sentences of any Indian language** and acquire working knowledge of a language.
- Its objective is to create an app that will **promote regional language literacy**, thereby creating greater cultural understanding within the country.
- The key parameters that will be looked into will include **ease of use, simplicity, Graphical User Interface, gamification features, UI, UX and superior content** that makes it easy and fun to learn an Indian language.

**Eligibility Criteria**

- The participants should be **Indian Citizens or companies/Start-up** with a majority stake of Indian Citizens.
- The **contest** is open to the following entities:
    - Start-ups,
    - Indian Legal Entities
        - Registration proof shall be submitted at the time of application;
        - It should have a minimum of **51% shareholding of Indian citizens** and should not be barred or blacklisted anywhere for government work.
- If Applicant (Individuals) is not yet registered as Start-up, they are still allowed to submit ideas, but are required to be **registered as a private limited company or registered as a partnership firm** or a limited liability partnership in India on or

before 30 days from the date of declaration of stage 1 result.

- An entity shall be considered a **'start-up'** as per **definition of startup** notified by Department for Promotion of Industry and Internal Trade (DPIIT).

## 4.20 Significance of Malerkotla

Recently, the Punjab Chief Minister Captain Amarinder Singh has announced on Eid that the former **princely state of Malerkotla** would be the **23rd district of the state.**

**Malerkotla**

- It is the **only Muslim-dominated town** of Punjab.
- Malerkotla owes its foundations in the **15th century to Sufi saint Sheikh Sadrauddin Sadar-i-Jahan**, also known as Haider Sheikh.
- The initial beginnings were humble with the settlement being called **'Maler'** which was bestowed by the **Behlol Lodhi to the Sheikh** whose lineage too was Afghan.
    - **'Kotla',** meaning **Fortress**, was added later in 17th century with a **collection of villages** which formed a jagir which was awarded to **Bayzid Khan**, a descendant of Haider Sheikh, by **Mughal Emperor Shah Jehan.**
- **Bayzid Khan supported Aurangzeb** against his brother Dara Shikoh and thus gained favour with the emperor and added permanency to the rule of his family.
- After the decline of the Mughal Empire, **Malerkotla's rulers exercised greater independence** and at the time of the invasion of India by Ahmad Shah Abdali from Afghanistan, they aligned with him.

**Relations of Malerkotla with neighbouring states**

- According to historian **Anna Bigelow's work, 'Punjab's Muslims'**, after Maharaja Ranjit Singh consolidated his rule in Northern Punjab in the early 19th century.
- Malerkotla aligned itself with the neighbouring Sikh states like **Patiala, Nabha and Jind**which too were feeling threatened by Maharaja Ranjit Singh's consolidation of the Sikh empire.
- These **cis-Sutlej states accepted British protection in 1809** and were free from

interference from the Sikh Maharaja.

- Malerkotla continued under the **British protection and the alliance with the neighbouring Sikh states till 1947** when it became the only Muslim majority Sikh state in East Punjab.
- After the **dissolution of the princely states in 1948**, Malerkotla joined the new state of **PEPSU or Patiala and East Punjab States Union (PEPSU).**
    - PEPSU itself was **dissolved in 1954** and **Malerkotla became a part of Punjab.**

**Special status of Malerkotla with the Sikh community**

- The special relationship between Sikhs and Malerkotla goes back to the period when the **tenth Sikh Guru, Guru Gobind Singh**, was engaged in a series of battles with the oppressive Mughal rules of the region.
- **Sher Mohammad Khan was the Nawab of Malerkotla** at the time and though a supporter of Aurangzeb, has expressed his anguish at the bricking alive of two young sons of Guru Gobind Singh, **Zorawar Singh (aged nine years)** and **Fateh Singh (aged seven years)**, by the Subedar of Sirhind Wazir Khan in 1705.
- The **'Haa da Naara' or cry for justice** was made by Sher Mohammad Khan before Wazir Khan when the order to brick the two young boys was pronounced.
- **Iftikhar Khan, the last Nawab of Malerkotla**, has declared in his history of the kingdom that Malerkotla was spared because of **'Haa Da Naara'.**

**Relations of Malerkotla rulers with Sikhs after the 'Haa Da Naara'**

- It is documented that even after the Haa Da Na, the **Malerkotla rulers continued their affinity with the Mughal rulers**.
- The Malerkotla rulers **aligned with the Afghan invader Ahmed Shah Abdali** once the suzerainty of the Mughals was on the decline.
    - **Nawab Jamal Khan of Malerkotla** fought against rulers of Patiala and also against Abdali before joining hands with him.
    - His successor **Nawab Bhikam Shah** is said to have fought on the side of Abdali's forces in a battle against the Sikhs in 1762 which is known as 'Wadda Ghallugara' or the Great Holocaust.

- In 1769, a **treaty of friendship** was signed with **Raja Amar Singh of Patiala** by the then **Nawab of Malerkotla.**
- The Patiala princely state was often to the aid of Malerkotla especially in 1795 when **Sahib Singh Bedi attacked Malerkotla** over the issue of cow slaughter.
- The N**amdhari (a sect of Sikhs) massacre of 1872 in Malerkotla** is an important incident in the historical annals of the town.

## 4.21 Medicines from Sky Project

Recently, the **'Medicines from Sky'** project has received a shot in the arm, with the **Ministry of Civil Aviation** and the **Director General of Civil Aviation** according a conditional nod to the Telangana government for **deployment of drones for delivery of Covid-19 vaccines**.

**Medicines from Sky Project**

- The Telangana government, **World Economic Forum and HealthNet Global**, had signed a collaboration agreement for the 'Medicine from the Sky' project.
- A feasibility study is being planned to **study drone-based delivery of blood, vaccines, medical samples** and long tail medicine.
- The Central government, in exercise of powers conferred by Rule 70 of the UAS Rules, 2021, has granted **conditional exemption to Telangana for the purpose of trying out drones for delivery**.
- The consortiums shortlisted by Telangana will be able to start trials on **ground to build a safety case for regulators** for considering the Beyond Visual Line of Sight (BVLOS) range.

**Key Highlights**

- The permission has been granted for conducting experimental delivery of Covid-19 vaccines within **Visual Line of Sight (VLOS) Range.**
- The permission exemption is **valid for one year or until further orders**, subject to the conditions laid out.
- It is **proposed to take up BVLOS flights in Vikarabad district** of Telangana with the Area Hospital as the take-off site and various PHCs and sub-centres as the landing sites.

- The programme will be for 24 days, where the **eight selected consortia would be divided into four batches of two consortia**, and each batch would perform the sorties for 6 days.

**Significance of Medicines from Sky Project**

- It would yield **important information on the reliability of drones** and their adoption in medical deliveries.
- The success of this programme has the **potential to disrupt the healthcare industry**and save many lives during emergencies and in less accessible geographies.
- The project aims to **explore the use of drones to increase access to healthcare** for communities across the Telangana state.
- The project could become a **reference model for other states** looking at drone applications around healthcare in India.

**Indian Government's Push for Drone Technology**

- According to a global market intelligence and advisory firm BIS Research, the **Indian drone market is expected to be valued at $885.7 Mn** by 2021.
- In September 2018, the ministry of civil aviation (MoCA) **legalised flying commercial drones**.
- The **Drone Regulations 2.0 in 2019** had proposed regulations for operation of drones in public spaces, particularly the ones implemented at a commercial scale.
- India's science and technology ministry announced a **government project to digitally map the country** with a resolution of 10 cm, using drones and technologies such as artificial intelligence and big data.
- India's Directorate General of Civil Aviation has **certified two Bengaluru-based drone startups**, Skylark Drones and Throttle Aerospace Systems.

## 4.22 Independent Collegium for appointments in Election Commission

Recently, the Association for Democratic Reforms has filed a petition before the Supreme Court seeking formation of a "**neutral and independent collegium or selection committee"** for the appointment of members of the Election Commission.

**Election Commission of India**

- The Election Commission is a **permanent and an independent body** established by the Constitution of India directly to ensure free and fair elections in the country.
- **Article 324 of the Constitution** provides that the power of superintendence, direction and control of elections to parliament, state legislatures, the office of president of India and the office of vice-president of India shall be vested in the election commission.
- The Election Commission is an **all-India body** in the sense that it is common to both the Central government and the state governments.
- The election commission is **not concerned with the elections to panchayats and municipalities** in the states.

**Current procedure for appointments in Election Commission of India**

- The Election Commission shall consist of the **chief election commissioner** and such number of other **election commissioners**, if any, as the president may from time to time fix.
- The **appointment** of the chief election commissioner and other election commissioners shall be made by the **president.**
- When any other election commissioner is so appointed, the **chief election commissioner shall act as the chairman** of the election commission.
- The president may also **appoint after consultation with the election commission** such**regional commissioners** as he may consider necessary to assist the election commission.

**Conditions of service and Tenure of Chief Election Commissioner (CEC)**

- The **conditions of service and tenure of office** of the election commissioners and the regional commissioners shall be determined by the president.
- The CEC and the two other election commissioners have **equal powers and receive equal salary, allowances and other perquisites**, which are similar to those of a **judge of the Supreme Court.**
- They hold office for a **term of six years or until they attain the age of 65 years**, whichever is earlier.

- They can **resign at any time** or can also be removed before the expiry of their term.

**Need for independent collegium for Election Commission**

- The practice of the central government appointing the members of the Election Commission **violates Articles 14 and 324(2) of the Constitution**, the non-government organisation said in its plea.
    - **Article 14** of the Constitution deals with **Right to Equality**, whereas **Article 324(2)** gives the President the power to **appoint members of the poll body.**
- The appointment of members of the Election Commission is **done on the whims and fancies of the executive** and vi**olates the very foundation** on which it was created.
- The appointments give **unfettered discretion to the ruling party to choose someone whose loyalty to it is ensured** and thereby renders the selection process vulnerable to manipulation.
- The Commission renders a **quasi-judicial function** between the various political parties, including the ruling government and other parties.

**Recommendations for Independent Collegium for Election Commission of India**

- The petition cited the **255th Law Commission Report** which recommended that the appointment of Election Commission members should be made by the President.
    - The president shall consult with a three-member collegium or selection committee, consisting of the prime minister, the leader of Opposition of the Lok Sabha and the chief justice of India.
- **Dr. Dinesh Goswami Committee in its Report of May 1990** recommended for the effective consultation with neutral authorities like Chief Justice of India.
- The **4th Report of the Second Administrative Reform Commission** also recommended for the constitution of a neutral and independent collegium:
    - It should be headed by the Prime Minister with the Speaker of the Lok Sabha, the Leader of Opposition in the Lok Sabha, the Law Minister and the Deputy Chairman of the Rajya Sabha as is members.
- **Justice Tarkunde Committee in its Report of 1975** recommended that the

members of Election Commission should be appointed by the President on the advice of a Committee consisting of the Prime Minister, the Leader of the Opposition in the Lok Sabha and the Chief Justice of India.

## 4.23 West Bengal wants Legislative Council

Recently, the Trinamool Congress government in West Bengal approved the setting up of a **Legislative Council** in the state.

**Legislative Councils**

- The **legislatures with two Houses (bicameral)** have a long history in India.
- The **Montagu-Chelmsford reforms** led to the formation of the **Council of State at the national level** in 1919.
- The **Government of India Act of 1935** set up bicameral legislatures in Indian provinces and it was under this law that **a Legislative Council first started functioning in Bengal in 1937**.
    - Currently, six states i.e. **Bihar, Uttar Pradesh, Maharashtra, Andhra Pradesh, Telangana and Karnataka** have a Legislative Council.
- The **third schedule of the constitution** provides salaries and allowances of the Speaker and Deputy Speaker of the Legislative Assembly and the Chairman and the Deputy Chairman of the Legislative Council.
- Like the Rajya Sabha, the legislative council is a **continuing chamber** i.e. it is a permanent body and is not subject to dissolution.

**Constitutional Provision for Legislative Councils**

- The **Article 168** of the Constitution empowers the Legislative Assembly to create or abolish a Legislative Council by passing a resolution.
    - The setting up of a second chamber is **not exclusively in the hands of the state government** and the central government also has to pilot a Bill in Parliament.
    - The resolution has to be passed by **two-thirds of the Assembly members** and then a Bill to this effect has to be passed by Parliament.

- The **Article 169 (1)** allows the Parliament may by law provide for the abolition of the Legislative Council of a State or for the creation of such a Council in a State.
- **Article 171** deals with nominations of members to state legislative councils and requires state Governor to nominate some names of those who have "special knowledge or practical experience in various matters.
    - The total number of members in the Legislative Council of a State having such a Council **shall not exceed one third of the total number of members** in the Legislative Assembly of that State.
- **Article 182** provides Chairman and Deputy Chairman of the Legislative Council.
- **Article 197** provides restriction on powers of Legislative Council as to Bills other than Money Bills:
    - If after a Bill has been **passed by the Legislative Assembly** of a State having a Legislative Council and **transmitted to the Legislative Council:**
        - the Bill is rejected by the Council; or
        - more than three months elapse from the date on which the Bill is laid before the Council without the Bill being passed by it; or
        - the Bill is passed by the Council with amendments to which the Legislative Assembly does not agree;
            - the Legislative Assembly may, subject to the rules regulating its procedure, pass the Bill again in the same or in any subsequent session with or without such amendments, if any, as have been made, suggested or agreed to by the Legislative Council and then transmit the Bill as so passed to the Legislative Council
    - If after a Bill has been so **passed for the second time by the Legislative Assembly**and transmitted to the **Legislative Council**
        - the Bill is rejected by the Council; or
        - more than one month elapses from the date on which the Bill is laid before the Council without the Bill being passed by it; or
        - the Bill is passed by the Council with amendments to which the

Legislative Assembly does not agree;

- the Bill shall be deemed to have been passed by the Houses of the Legislature of the State in the form in which it was passed by the Legislative Assembly for the second time with such amendments, if any, as have been made or suggested by the Legislative Council and agreed to by the Legislative Assembly

- The provisions of Article 197 **shall not apply** to Money Bills.

**Composition of Legislative Council**

- Unlike the members of the legislative assembly, the members of the legislative council are **indirectly elected.**
    - The **maximum strength** of the council is fixed at **one-third of the total strength of the assembly** and the **minimum strength is fixed at 40.**
- The Constitution has **fixed the maximum and the minimum limits** but the actual strength of a Council is fixed by Parliament.
- The **manner of election** of the total number of members of a legislative council:
    - **1/3 are elected by the members of local bodies** in the state like municipalities, district boards, etc.;
    - **1/12 are elected by graduates** of three years standing and residing within the state;
    - **1/12 are elected by teachers** of three years standing in the state, not lower in standard than secondary school;
    - **1/3 are elected by the members of the legislative assembly** of the state from amongst persons who are not members of the assembly; and
    - The remainder is **nominated by the governor** from amongst persons who have a special knowledge or practical experience of literature, science, art, cooperative movement and social service.
- It implies that **5/6 of the total number of members** of a legislative council is **indirectly elected** and **1/6 is nominated by the governor.**
- The members are elected in accordance with the **system of proportional representation** by means of a single transferable vote.

## 4.24 AIM-ICDK Water Innovation Challenge

Recently, the NITI Aayog has announced that **AIM-ICDK Water Innovation Challenge** concludes with great success.

**AIM-ICDK Water Innovation Challenge**

- It is a part of **Indo-Danish bilateral Green strategic partnership**.
- It is a joint initiative of **Atal Innovation Mission (AIM), NITI Aayog** and **Innovation Center Denmark (ICDK).**
- It was placed to **identify promising innovators from India**, who could represent and form the Indian participation in the global Next Generation Water Action program.

**Features of AIM-ICDK Water Innovation Challenge**

- It saw innovation submission from **400+ applicants and eventually identified a total of 10 Indian teams** including 6 Student teams and 4 startup teams from across the country.
- The **student and startup teams** were invited to present their ideas in following challenge areas:
    - Digital water management solutions,
    - Solutions for monitoring and prevention of leakage in city water supply,
    - Waste water management across rural belts and urban settlements,
    - Rainwater harvesting in rural and urban settlements, and
    - Safe and sustained drinking water
- The global program saw participation of **11 startup teams, 4 from India, 3 from Denmark, 2 from Kenya** and **2 from Ghana.**
- The startup teams competed at **International level for the Innovation awards** at Next Generation Water Action finals.

**Significance of AIM-ICDK Water Innovation Challenge**

- The initiative aims to **identify Innovative & next-gen solutions** to solve proposed

challenges in collaboration with corporate and public partners.

- The initiative will **engage young talent from leading universities and innovation** hubs across the nation to build their skills and apply their technical disciplines.
- The winners of the challenges shall be a part of the Indian team for the **Next Generation Water Action**.

## 4.25 WhatsApp Privacy Policy vs Government of India

Recently, the **Ministry of Electronics & Information Technology** has warned **WhatsApp once again to roll back** its latest update in privacy policy.

**New announcement from the government**

- The **tech and legal experts** feel that the new notice from the ministry may be challenged before a court of law.
- It marks the f**irst time that the Ministry has warned WhatsApp** of legal action.
- It has said it would pursue **all legal options available to it** "to protect the sovereign rights" of Indian citizens.
- The Ministry has reiterated that the **changes to WhatsApp's privacy policy and the manner of introducing them undermine** the sacrosanct values of informational privacy, data security and user choice for Indian users.

**Rift between government and WhatsApp**

- The communication between the IT Ministry and WhatsApp on the **issue of the updated privacy policy** has been going on since January 2021.
- The Ministry had said the **updated privacy policy and the subsequent changes** enabled WhatsApp and other Facebook companies "to make invasive and precise inferences about users".
- The Ministry had then sent a **set of 14 questions to WhatsApp on the various ways in which it collected data**, the permissions and consents it obtained from domestic users, and whether they were different from what it collected from users in other parts of the world.

- The Ministry had also sought to know whether the **company conducted any profiling** and what was the nature of such profiling.

**Option for WhatsApp in India**

- WhatsApp is likely to find it **difficult to push through the latest privacy policy** update.
- WhatsApp will have to explain to the government why it wants to **push the update before India comes out** with its law on personal data protection.
- WhatsApp has so far maintained that the app is **end-to-end encrypted** and it does not share any private data with Facebook.
- WhatsApp has said it would **not delay the implementation of the privacy policy** but it is likely that it will cut back on sending reminders and notices to users and on threats of de-platforming them eventually if they do not accept the new terms.

## 4.26 Data Breach in Air India

Recently, the **national carrier Air India** has notified its **passengers of a data breach** that occurred at the **SITA passenger service system** in February 2021.

**SITA**

- It is a **Switzerland-based technology company** specializing in air transport communications and information technology.
- The company was started by **11 member airlines in 1949** and now has over 2,500 customers in more than 200 countries.
    - The eleven original airlines were **Air France, KLM, Sabena, Swissair, TWA, British European Airways Corporation (BEAC), British Overseas Airways Corporation (BOAC), British South American Airways (BSAA), Swedish A.G. Aerotransport, Danish Air Lines**, and **Norwegian Air Lines.**
- It offers services such as **passenger processing, reservation systems**, etc.

**Relation between Air India and SITA**

- Air India had **entered into a deal with SITA in 2017** to upgrade its IT

infrastructure to enable it to join Star Alliance.

- At Air India, SITA also implemented an **online booking engine, departure control system, check-in and automated boarding control, baggage reconciliation system** and the frequent flyer programme.

**Air India data breach**

- Air India had said that **SITA had flagged a cyber-attack** and said it led to the leak of personal data of some of the airline's passengers.
- The airline said that the **cyber-attack that compromised the data of millions of passengers** from across the world involved personal data registered between 2011 and 2021.
- It said the breached data included the **passenger's name, date of birth, contact information, passport information, ticket information, frequent flyer data** and **credit card information.**

**Importance of cyber security in aviation sector**

- The airline industry in particular is also **privy to significant amounts of data generated** through new-age technologies such as the Internet of Things (IoT).
- The airline industry **gathers vast amounts of data** – passengers, flights, aircraft, financial information, and so on.
- The emerging technology **presents a critical tool in data protection** across the airline supply chain.
- The blockchain essentially **removes the human element**, thereby **reducing the risk of cyber threats** while providing end-to-end privacy and encryption.
- The aviation industry must consider **tools, technologies, and processes in three critical areas** to strengthen their cyber security programs which include:
    - Threat and Vulnerability Management
    - Identity and Access Management
    - Security Crisis and Incident Response
- **Early detection and timely prevention of cyber-attacks** can only be done with the help of investments in the right tools and qualified and experienced experts.

## 4.27 12th Annual Day – Competition Commission Of India

Recently the **12th Annual Day** of the **Competition Commission of India (CCI)** was observed on **20th May.**

- **Statutory Body:**
  - Competition Commission of India is **a statutory body** responsible for enforcing the objectives of the **Competition Act, 2002.**
  - **CCI** was established by the **Central Government** with effect from **14th October 2003**, but it became fully functional on **20th May, 2009.**
- **Composition:**
  - **A Chairperson** and **6 Members** appointed by the **Central Government.**

- **Formation of CCI:**
  - **The CCI** was established under the provisions of the **Competition act 2002:**
    - **The Competition Act, 2007**, was enacted after amending **Competition Act, 2002**, that led to the establishment of the **CCI and the Competition Appellate Tribunal.**
      - The government replaced the **Competition Appellate Tribunal (COMPAT)** with the **National Company Law Appellate Tribunal (NCLAT) in 2017.**
- **Functions and Role of CCI:**
  - **To eliminate practices** having adverse effects on competition, promote and sustain competition, protect the interests of consumers and ensure freedom of trade in the markets of India.
  - The Competition Commission of India takes the **following measures** to achieve its objectives:
    - **Consumer welfare** to make the markets work for the benefit and welfare of consumers.
    - **Ensure fair and healthy competition** in economic activities in

the country for faster and inclusive growth and development of the economy.

- **Implement competition policies** with an aim to effectuate the most efficient utilization of economic resources.
- **Develop and nurture effective relations** and interactions with sectoral regulators to ensure smooth alignment of sectoral regulatory laws in tandem with the competition law.
- **Effectively carry out competition advocacy** and spread the information on benefits of competition among all stakeholders to establish and nurture competition culture in Indian economy.

- **Need of CCI:**
  - **Promote free enterprise:** Competition is important for the preservation of economic freedom and our free enterprise system.
  - **Protect against market distortions:** The need for competition law arises because markets can suffer from failures and distortions, and various players can resort to anti- competitive activities such as cartels, abuse of dominance etc. which adversely impact economic efficiency and consumer welfare.
  - **Promotes domestic industries:** During the era in which the economies are moving from closed economies to open economies, an effective competition commission is essential to ensure the continued viability of domestic industries, carefully balanced with attaining the benefits of foreign investment increased competition.

## 4.28 Appointment of new director of the Central Bureau of Investigation (CBI)

Recently, a high-powered committee chaired by Prime Minister Narendra Modi met to select the **new director of the Central Bureau of Investigation (CBI).**

**Establishment of CBI**

- It was **set up in 1963** by a resolution of the **Ministry of Home Affairs.**
- It was **transferred to** the **Ministry of Personnel** and now it enjoys the status of an attached office.

- It was recommended by the **Santhanam Committee on Prevention of Corruption**(1962-1964).
- The CBI is **not a statutory body** but it derives its powers from the **Delhi Special Police Establishment Act, 1946.**
- It plays an important role in the **prevention of corruption and maintaining integrity** in administration.

**Composition of CBI**

- It is **headed by a Director** and assisted by a special director or an additional director.
- The **Director of CBI as Inspector-General of Police**, Delhi Special Police Establishment, is responsible for the administration of the organisation.
- The **Lokpal and Lokayuktas Act (2013)** amended the Delhi Special Police Establishment Act (1946) and made the following changes with respect to the composition of the CBI:
- The **Central Government shall appoint the Director of CBI** on the recommendation of a **three-member committee** consisting of:
    - The Prime Minister as Chairperson,
    - The Leader of Opposition in the Lok Sabha (leader of the single largest opposition party in the Lok Sabha)
    - The Chief Justice of India or Judge of the Supreme Court nominated by him
- There shall be a **Directorate of prosecution headed by a Director** for conducting the prosecution of cases under the Lokpal and Lokayuktas Act, 2013.
- The Central Government shall **appoint officers of the rank of SP** and above in the CBI on the recommendation of a committee consisting of:
    - The Central Vigilance Commissioner as Chairperson
    - The Vigilance Commissioners
    - The Secretary of the Home Ministry
    - The Secretary of the Department of Personnel

**CBI vs State Police**

- The role of the **Special Police Establishment (a division of CBI)** is supplementary to that of the state police forces.
- In order to **avoid duplication and overlapping of cases** between these two agencies, the following administrative arrangements have been made:
    - The SPE shall take up such cases which are essentially and substantially concerned with the Central Government's affairs or employees, even if they also involve certain state government employees.
    - The state police force shall take up such cases which are substantially concerned with the state government's affairs or employees, even if they also involve certain Central Government employees.
    - The SPE shall also take up cases against employees of public undertakings or statutory bodies established and financed by the Central Government.

## 4.29 Ayush Clinical Case Repository (ACCR) portal and Ayush Sanjivani App

Recently, the Ministry of AYUSH has launched the **Ayush Clinical Case Repository (ACCR) portal** and **Ayush Sanjivani App**.

**Ayush Clinical Case Repository (ACCR) Portal**

- It is the **dedicated section for reporting** and **publishing details** of Covid 19 cases treated through Ayush Systems.
- It is conceptualized and developed by the **Ministry of Ayush** as a platform to support both **Ayush practitioners and the public.**
- It welcomes **Ayush practitioners from all over the world** to enroll and share information about successfully treated cases for the benefit of all.
- It covers all the seven systems of Ayush viz. **Ayurveda, Yoga, Naturopathy, Unani, Siddha, Homoeopathy** and **Sowa Rigpa.**

**Significance of Ayush Clinical Case Repository (ACCR) Portal**

- It aims to **aggregate information about clinical outcomes** achieved by Ayush

practitioners on a large scale.

- It will facilitate not just **dissemination of information** but also further analysis and research.
- It is expected to **document the strengths of Ayush systems** for treatment of various disease conditions.

**Ayush Sanjivani App**

- It facilitates a significant **study/ documentation regarding the efficacy of selected Ayush interventions**, including Ayush 64 and Kabasura Kudineer medicines.
- It will help to **generate data on acceptance and usage of AYUSH advocacies** and measures among the population and its impact in prevention of COVID 19.
- It is developed by **Ministry of AYUSH and MEITY** and shall reach out to a target of 50 lakh people.

Raja Sir's

## 4.30Victory of Pulakeshin II over Harshvardhana

Recently, the **coinciding lunar eclipse and Buddha Purnima** had led to remembering of an event which took place **1402 years ago** in which **Pulakeshin II emerged victorious over Harshvardhana.**

- The **inscriptions on a copper plate** owned by Mumbai-based Raghuveer Pai became a vital link in establishing the day and year in which **Chalukya king Pulakeshin II emerged victorious over emperor Harshvardhana.**
- Pulakeshin II held forts of almost the **entire Deccan region of southern India**, whereas **Harshvardhana's empire extended across the present-day North and Northwest regions** of India.
- Until 2016, the historic **battle was believed to have taken place** sometime between 610 CE (Common Era) and 634 CE.
- It is believed that these copper plates, highlighting the victory, were **commissioned by Pulakeshin II on Vaishakh Purnima** in 619 CE.
- The battle ended with a historic geographical demarcation i.e. **Narmada River became the boundary** between the southern territory of Chalukyas and Vardhanas' empire in North India.

**Evidence related to war between Pulakeshin II and Harshvardhana**

- The Aihole inscription of Pulakeshin II, according to which, was **crowned by the aura of the crown of the feudatories** reared by immense opulence.
    - **Charan Kamal**, which looked terrible due to the killing of the army of elephants in the battle.
- According to **Hsuansang's travel description Si-yu-ki** after his ascension, Harsh waged many wars for 6 consecutive years.
    - But Mo-Ho-L-Ch-A means the ruler of Maharashtra was brave and self-respecting.
    - He did not accepted subordination of Harsh.

**Pulakeshin II**

- He was one of the **greatest King of Chalukya Dynasty** and he began his rule in the year 620 A.D.
- The chief aim of Pulakeshin II was to **convert the Chalukya Kingdom into a big southern empire.**
- Pulakeshin II also **described his military achievements** in his famous **Aihole Prasasti or Inscription.**
- The date of the **Aihole Stone Inscription** falls on 634-35 A.D.

## 4.31 Whatsapp v/s Traceability Clause of IT Rules

Recently, the Facebook-owned messaging platform **WhatsApp is taking the Indian government to court over the traceability clause** in the new IT Rules 2021.

- The new IT rules include a traceability clause that requires social media platforms to locate **"the first originator of the information"** if required by authorities.
- It should be noted that this rule will **impact most messaging apps** such as Signal, Telegram, Snapchat, Wire and others.

**What does WhatsApp's lawsuit state?**

- WhatsApp is invoking the **2017 Justice K S Puttaswamy vs Union of India**

**case** to argue that the **traceability provision is unconstitutional** and **against people's fundamental right to privacy.**

- The plea states that the court should declare the **traceability clause as "unconstitutional"** and should not allow it to come into force.
- It is also challenging the clause which puts **"criminal liability"** on its employees for non-compliance.

**Arguments of WhatsApp on Traceability**

- The requirement to **'trace' chats would be the equivalent of asking us to keep a fingerprint** of every single message sent on WhatsApp"
- It would mean that the **platform will have to break end-to-end encryption**, which is turned on by default for all messages.
- The traceability would mean **re-engineering the app just for the Indian market**, which is unlikely to happen.
    - The **end-to-end encryption** ensures that no third-party, not even the messaging app itself can track or read messages.
- It says it is all for **"reasonable and proportionate regulations"**, but cannot support eroding privacy for everyone, violating human rights, and putting innocent people at risk.

**Why is WhatsApp against finding the originator of a message?**

- The end-to-end encryption ensures that **no one can read the message**, except for the sender and the receiver which includes WhatsApp itself.
- The a**pp does not keep a log** of who is sending what message and to whom.
    - It **cannot read the contents** of a message and finding the originator is even harder.
- WhatsApp says that if it had to trace an originator, then it would have to **"store information"** and it will have to add some sort of **"permanent identity stamp"** or effectively 'fingerprint' each message.

**WhatsApp's resistance on imposing traceability**

- Its argument is that traceability, even if enforced, is **not foolproof** and could **lead to**

**human rights violations.**

- They will have to **turn over the names of people who shared something** even if they did not create it, shared it out of concern, or sent it to check its accuracy.
- It notes that i**nnocent people could get caught up in investigations**, or even go to jail, for sharing content that later becomes problematic in the eyes of a government.
- It also adds that such an approach will **violate recognised principles of free expression and human rights.**

**Arguments on digital fingerprinting**

- The internet experts have also argued against **digital fingerprinting techniques** to achieve traceability, cautioning these can **be easily impersonated.**
- The experts have warned that **innocent users could get implicated for activities carried out by cyber criminals** who might use more sophisticated techniques to impersonate a sender.
- The experts are clear that **fingerprinting techniques are open to abuse**, and in the end will undermine encryption entirely.

## 4.32 Intermediary Guidelines and Digital Media Ethics Code

Recently, the **new rules for social media platforms** and digital news outlets, called the Intermediary Guidelines and Digital Media Ethics Code, came into effect.

- In February 2021, the guidelines had asked all social media platforms to set up a **grievances redressal and compliance mechanism.**
    - It included appointing a **resident grievance officer, chief compliance officer** and a **nodal contact person.**
- The Ministry of Electronics & Information Technology had also asked these platforms to **submit monthly reports on complaints received** from users and action taken.
- A third requirement was for instant messaging apps was to make provisions for **tracking the first originator of a message.**
- The **failure to comply with any one of these requirements** would take away the indemnity provided to social media intermediaries under Section 79 of the Information Technology Act.

**What is Section 79 of the IT Act?**

- It says any intermediary **shall not be held legally or otherwise liable** for any third party information, data, or communication link made available or hosted on its platform.
- The Act says that the **protection shall be applicable** if the said intermediary does not in any way:
    - Initiate the transmission of the message in question;
    - Select the receiver of the transmitted message; and
    - Does not modify any information contained in the transmission.
- It implies that that as long as a **platform acts just as the messenger carrying a message** from point A to point B, without interfering in any manner, it will be safe from any legal prosecution.
- The protection accorded under Section 79 is not granted if the intermediary, despite being informed or notified by the government or its agencies, **does not immediately disable access** to the material under question.
- The **intermediary must not tamper with any evidence** of these messages or content present on its platform, failing which it lose its protection under the Act.

**Need for protection under Sector 79 of IT Act**

- The need to provide **protection to intermediaries from actions** of third parties came into focus following a police case in 2004.
- In November 2004, an **IIT student posted an obscene video clip for sale** on bazee.com, an auction website.
- The case against the website was made out for listing of the video clip and its content, which were pornographic in nature, while the CEO of the website was held **liable under Section 85 of the IT Act.**
    - It says that when a company commits an offence under the IT Act, **all executives in-charge** at that time should be held liable and proceeded against.
- The **decision was overturned in 2012 by the Supreme Court**, which held that the website could not be held accountable since they were not directly involved in the

said transaction.

- The IT Act was amended to **introduce Section 79** following the decision of the Supreme Court.

**What happens if a social media firm is no longer protected under Section 79?**

- The social media intermediaries will **continue to function** as they were, without any hiccups.
    - People will also be able to **post and share content on their pages** without any disturbance.
- The social media intermediaries have so far **not appointed** a resident grievance officer, chief compliance officer and a nodal contact person as requires under the new rules.
- They have also **failed to submit monthly action taken reports** on grievances and complaints submitted to them by users and the protection under Section 79 of the IT Act does will not hold for them.
- The **Rule 4(a) of the IT Rules**, which mandates that significant social media intermediaries must appoint a chief compliance officer (CCO) who would be held liable in case the intermediary fails to observe the due diligence requirements, also undermines the safe harbour protections.
- The **absence of the umbrella protection of Section 79** could also lead to situations where employees of the platform may be held liable for no fault on their part.
    - It could lead to a situation where **employees of social media giants could be held personally liable** for failing to ensure that their employer complied with the statutory provisions.

**Global norms on safe harbour protection for social media intermediaries**

- The **Section 230 of the 1996 Communications Decency Act** provides internet companies a safe harbour from any content users post of these platforms.
    - It states that **no provider or user of an interactive computer service** shall be treated as the publisher or speaker of any information provided by another information content provider.
- It effectively means that the **intermediary shall only be like a bookstore**

**owner** who cannot be held accountable for the books in the store.

## 4.33 SeHAT OPD Portal

Recently, the Union Minister of Defence has launched the **'SeHAT OPD' Portal**.

**SeHAT OPD portal**

- It is **Services e-Health Assistance & Tele-consultation (SeHAT)** OPD portal.
- It provides **tele-medicine services** to the serving **Armed Forces personnel, veterans and their families**.
- It is developed by **Department of Military Affairs (DMA), Armed Forces Medical Services (AFMS), Integrated Defence Staff (IDS)** and **Centre for Development of Artificial Computing (C-DAC) Mohali.**
- It is a **Defence Services online OPD service** that enables patients to consult doctors.
- It is first of its kind **patient-to-doctor telemedicine system** that will serve as a **Tri-Service tele-consultation** facility
- It will help **reduce the load on hospitals** and patients will be able to get contactless consultations in an easy and effective manner.
- It is based on the lines of **e-Sanjeevani** a similar free OPD service run by the MoHFW for all citizens.
- It is a **patient to doctor system**, initially for a general OPD consultation and proposed to be extended to specialist OPD consultation subsequently.

**Centre for Development of Advanced Computing (C-DAC)**

- It is the **premier R&D organization** of the Ministry of Electronics and Information Technology (MeitY).
- It is **working on strengthening national technological capabilities** in the context of global developments in the field and responding to change in the market need in selected foundation areas.
- It **represents a unique facet working** in close junction with MeitY to realize nation's policy and pragmatic interventions and initiatives in Information Technology.

## 4.34 Widespread resentment in Lakshadweep over a slew of bad law proposals

A slew of regulations introduced by the new administrator are creating a widespread discontent in the Lakshadweep group of islands in the last five months.

New regulations

- The mandatory quarantine of Dweep-bound travellers in Kochi was done away with and because of that Covid hit the Lakshadweep.
    - Lakshadweep descends from being a 'COVID-free region' for nearly a year into one with 6,847 cases until May 24.
- The latest draft regulation for the **creation of a Lakshadweep Development Authority (LDA)** is widely resented as the people suspect that this might have been issued at the behest of 'real estate interests' seeking to usurp the small holdings of property owned by the islanders, a majority of them (94.8% as per the 2011 census) belonging to the Scheduled Tribes.
- The regulation **empowers the government, identified as the administrator**, **to constitute Planning and Development Authorities** under it to plan the development of any area identified as having "**bad layout or obsolete development**".
- **Only cantonment areas are exempted** from this.
- An authority thus created would be a body corporate with a government-appointed chairman, a town planning officer and three 'expert' government nominees besides two local authority representatives.

The concern of people:

- The islanders opposing the plan have pointed out that the **ecologically fragile islands are tiny and thickly populated.**
- The **largest of the inhabited islands is Androth** with a landmass of 4.9 sq km area where the density of population is 2,312 per sq km. People are questioning the need of construction of highway or tram-way in this area.
- One of the petitions seeking the withdrawal of the LDA regulation says the legislation can prepare comprehensive development plans for any area and **relocate people regardless of their will**.

- It provides for **forcible eviction**, puts the onus on the owner to develop his holding as per the plan prepared by the authority as also to heavily penalise them in the event of non-compliance.
- Online campaigns to save Lakshadweep is gaining strength with celebrities including actor Prithviraj raising their voice in solidarity.
- A Rajya Sabha MP has written to President Ramnath Kovind urging him to recall the 'authoritarian' administrator.

Key facts on Lakshadweep

- Lakshadweep, formerly (1956–73) **Laccadive** is a union territory of India.
- It is a **group of some three dozen islands** scattered over some 78,000 square km of the **Arabian Sea** off the southwestern coast of India.
- The principal islands in the territory are **Minicoy** and those in the **Amindivi** group.
- The easternmost island lies about 300 km from the coast of the state of Kerala.
- **Ten of the islands are inhabited**.
- The administrative centre is **Kavaratti.**
- Almost all the inhabited islands are **coral atolls.**

## 4.35 Goa Statehood Day

The Prime Minister of India has greeted the people of Goa on their Statehood Day.

- On **30 May 1987,** Goa was conferred statehood and Daman and Diu was made a separate union territory.
- The Portuguese continued to hold territory in some parts of the **country after 1947.**
- The **Government of India as well as local forces** made many attempts to free Goa from clutches of the foreign invaders.

Operation Vijay:

- After several attempts at peaceful negotiations, the Government of India decided to **deploy the armed forces**.
- Operation Vijay began on **December 17, 1961** when the then **Prime Minister**

**Jawaharlal Nehru**ordered the invasion.

- With **minimal bloodshed**, the attack was successful and was carried forward to retrieve the other Portuguese-controlled areas, **Daman and Diu.**
- At this point on **December 18**, the Portuguese Governor General Vassalo da Silva gave up control of the **Union Territory of Goa, Daman and Diu.**
- Three days after the attack began, **Goa finally became a part of India.**

Goa Opinion Poll Day

- Goa celebrated its **52nd Opinion Poll Day** on **January 16.**
- It was on this date in 1967 that **Goans voted against merging with Maharashtra** and **chose to remain a Union Territory**. Though referred to as an 'opinion poll', the vote was in fact a plebiscite.
- Soon after Goa's liberation from **colonial Portuguese rule in 1961**, murmurs began of a merger with **Maharashtra on grounds of cultural similarity and the argument that Konkani** was a **dialect of Marathi** and **not an independent language**.

## POLITICAL ISSUES, HUMAN RIGHTS AND GOVERNANCE

### 5.1 Unique ID for Persons with Disabilities

Recently, the Centre has made it **mandatory for all States/UTs to grant certificate of disability through online mode only using UDID** (Unique ID for Persons with Disabilities) portal with effect from June 1.

**What does Central Government's announcement on disability certificate mean?**

- The sector had been demanding such a move, especially during the coronavirus crisis where **people with disabilities were unable to get their certificates** due to the prevalent restrictions.
- A disability certificate for **people with disabilities is a necessity as they can avail the benefits of different government schemes** by furnishing the document.
- The **concerned authorities of all States/UTs have been imparted training** by DEPwD for working on the UDID portal.
- The States/UTs have been given **adequate time to convert to online mode** which

will ensure complete digitization of certification of disability from 1st June 2021.

**What is Unique ID for Persons with Disabilities?**

- The **"Unique ID for Persons with Disabilities"** project is being implemented with a view of creating a **National Database for PwDs.**
- The UDID project is under **implementation since 2016..**
- The project aims to issue a **Unique Disability Identity Card** to each person with disabilities.
- The project will **encourage transparency, efficiency and ease of delivering the government benefits** to the person with disabilities.
- The UDID card will be **valid pan-India**.
- The UDID portal shall be designed to **provide an online platform** for the following:
    - New application for UDID
    - Renewal of existing Certificate/Card on expiration of validity
    - In the event of loss of card/certificate

**Types of disabilities**

- As per the **Persons with Disabilities (Equal Opportunities, Protection of Rights & Full Participation) Act, 1995** A person with disability can be defined as one with one or more of disabilities falling under any of the below mentioned categories :
    - **Blindness:** It refers to a condition where a person suffers from any of the following conditions namely:-
        - Total absence of sight; or
        - Visual acuity not exceeding 6/60 or 20/200 (Snellen) in the better eye with correcting lenses; or
        - Limitation of the field of vision subtending an angle of 20 degree or worse;
    - **Cerebral Palsy:** It means a group of non-progressive conditions of a person characterized by abnormal motor control posture resulting from

brain insult or injuries occurring in the pre-natal, peri-natal or infant period of development;

- **Low vision:** It means a person with impairment of visual functioning even after treatment of standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive device;
- **Locomotor disability:** It means disability of the bones, joints or muscles leading to substantial restriction of the movement of the limbs or nay form of cerebral palsy;
- **Leprosy-cured:** It means person who has been cured of leprosy but is suffering from:
    - Loss of sensation in hands or feet as well as loss of sensation and paresis in the eye and eye-lid but with no manifests deformity;
    - Manifest deformity and paresis but having sufficient mobility in their hands and feet to enable them to engage in normal economic activity;
    - Extreme physical deformity as well as advanced age which prevent him from undertaking and gainful occupation and the expression "Leprosy Cured" shall be construed accordingly;
- **Mental retardation:** It means conditions of arrested or incomplete development of mind of a person which is specially characterized by sub normality of intelligence;
- **Mental illness:** It means any mental disorder other than Mental retardation
- **Hearing Impairment:** It means loss of sixty decibels or more in the better ear in the conversational range of frequencies

## 5.2 Paediatric Task Force

Recently, the **Maharashtra government** has constituted a nine-member committee called **Paediatric Task Force.**

- The experts have said that while there is a **vaccination programme for those aged more than 18 years, children and teenagers** are still vulnerable to the infection.

- Of 48.93 lakh Covid-19 cases in Maharashtra, **10 per cent cases have been reported from those aged less than 20 years**.
    - Of that 1.49 lakh are **children aged less than 10 years.**
- The **children suffer diarrhoea, loss of appetite and fever** as common signs of Covid-19, unlike adults who suffer weakness, body pain, fever, loss of smell and taste.

**Paediatric Task Force**

- The task force has been set up under the **chairmanship of Dr Suhas Prabhu** in an attempt to brace for the next wave.
- The special paediatric task force will be **responsible for procuring medicines for children, paediatric ventilators and building Covid-19 care centres** for children.

**Objectives of Paediatric Task Force**

- It aims to develop a **comprehensive plan for treating children** affected with Covid-19.
- It will **set up more sick new born care units (SNCUs),** more ventilators suited for infants and prepare a separate line of medication for them.
- It has recommended **setting up fever clinics with paediatricians** or trained staff to screen children with Covid symptoms.

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## 5.3 Report on Connected Commerce: Creating a Roadmap for a Digitally Inclusive Bharat

Recently, **NITI Aayog** and **MasterCard** have released a report titled **'Connected Commerce: Creating a Roadmap for a Digitally Inclusive Bharat'**.

**Key Highlights**

- It identifies challenges in **accelerating digital financial inclusion** in India.
- It provides recommendations for **making digital services accessible to its 1.3 billion citizens.**
- The report highlights **key issues and opportunities on policy and capacity building**across agriculture, small business (MSMEs), urban mobility and cyber

security.

- The **key issues** addressed during the knowledge series were:
    - **Acceleration of digital financial inclusion** for underserved sections of Indian society.
    - **Enabling SMEs to 'get paid**, get capital and get digital' and access customers, and ensure their continued resilience.
    - **Policy and technological interventions** to foster trust and increase cyber resilience.
    - **Unlocking the promise of digitization** in India's agriculture sector.
    - The essential elements of a digital roadmap to **make transit accessible for all citizens.**

**Recommendations of Report on Connect Commerce**

- The **key recommendations** in the report include:
    - **Strengthening the payment infrastructure** to promote a level playing field for NBFCs and banks.
    - **Digitizing registration and compliance processes** and diversifying credit sources to enable growth opportunities for MSMEs.
    - **Building information sharing systems**, including a 'fraud repository', and ensuring that online digital commerce platforms carry warnings to alert consumers to the risk of frauds.
    - **Enabling agricultural NBFCs to access low-cost capital and deploy a 'phygital'** (physical + digital) model for achieving better long-term digital outcomes. Digitizing land records will also provide a major boost to the sector.
    - To make **city transit seamlessly accessible to all** with minimal crowding and queues, leveraging existing smartphones and contactless cards, and aim for an inclusive, interoperable, and fully open system such as that of the London 'Tube'.

## 5.4 DETER committees

Recently, as Bengaluru continues to witness a daily surge in fresh Covid-19 infections and related fatalities, the s**tate government has decided to manage pandemic at the local level.**

- The **Decentralized Triage and Emergency Response (DETER) Committees** at ward-levels will work on the orders of the state government.

**DETER Committees**

- They have been formed across 198 wards in Bengaluru with the objective to **strengthen government response and management** of the coronavirus pandemic.
- They are being formed in the **Karnataka capital,** which will be overseen by the **Bruhat Bengaluru Mahanagara Palike**.
- They are also known as **WDCs (Ward-level DETER Committees).**
- These teams will **emphasise on the distribution of localised action** in a decentralised system of disaster response.
- They will be run in synergy with **BBMP officials, ward committee members, government officers, representatives of the peoples, volunteers from resident welfare associations, civil society organisations**, and **disaster-support initiatives.**
- WDCs will function on **open-source technology** with a suitable online platform identified by the BBMP for the same.

**Major responsibilities of WDCs**

- The WDCs will emerge as the **first-point contact** for those infected with Covid-19.
- It will be entrusted with the **responsibility to provide timely and accurate information to citizens** on appropriate actions and behaviours that need to be taken at each stage of the Covid lifecycle.
- The grievance redressal and escalate citizen needs and mobilisation of resources and essential medical supplies in the ward will also be carried out by the WDCS.

**Strategy to be in place for WDCs**

- The Karnataka government has formulated a **'3E Strategy' for WDCs** to micromanage Covid-19 in a comprehensive manner.
- The **3E Strategy** is explained as follows:

- **Efficient admission** to hospitals facilitated by community triage services;
- **Efficient discharge** from hospitals enabling efficient bed-turnover;
- **Empowering hospitals**, doctors, and their management with supportive supervision.

## 5.5 NIA court allows jailed MLA to take oath

Recently, a special National Investigation Agency (NIA) court **granted permission to jailed activist** Akhil Gogoi to **take oath as legislator** of Assam Assembly.

**Constitutional provisions for MLAs taking oath**

- In pursuance of clause (a) of **article 84** and clause (a) of **article 173** of the Constitution of India, the Election Commission authorises:
  - The **returning officer** concerned and all the assistant returning officers subordinate to him,
  - **All stipendiary presidency magistrates** and all stipendiary magistrates of the first class, and
  - **All district judges** and all persons belonging to the judicial service of a State other than district judges.
    - Shall **make and subscribe the oath or affirmation** in the form set out for the purpose in the **Third Schedule** of the **Indian Constitution.**
- In pursuance of **clause (a) of the said article 84** and **clause (a) of the said article 173**, the Election Commission hereby also authorises as the person before whom the candidate may make and subscribe the said oath or affirmation:
  - Where the **candidate is confined in a prison**, the superintendent of the prison;
  - Where the **candidate is under preventive detention**, the commandant of the detention camp;
  - Where the **candidate is out of India**, the diplomatic or consular representative of India in the country where the candidate happens to be or any person authorised by such diplomatic or consular representative;
  - Where the **candidate is for any other reason unable to appear**, or

prevented from appearing before the returning officer concerned or any assistant returning officer as aforesaid.

**Why Prisoners cannot vote?**

- The **Representation of the People Act, 1951**, Section 62(5) states that "**No person shall vote at any election if he is confined in a prison**, whether under a sentence of imprisonment or transportation or otherwise, or is in the lawful custody of the police".
- **Chapter 43 of the Reference Handbook on the General Elections**, released by the Election Commission in 2014, further **excluded under-trial prisoners from voting** even if their names are on electoral rolls.
- As per Section 62(5) if the Representation Act, those being **held under preventive detention can participate in elections** and cast their vote via postal ballots.
- In 2014, the Election Commission also confirmed that **detainees had the right to vote,**but not under-trials and convicts.

**Provisions for jailed person to contest an election**

- A 2013 amendment of Representation of the People Act provides that the **person even if barred from voting shall not cease to be an elector**, whose name has been entered in the electoral rolls.
- The section 3 of the Act, which deals with **qualification, creates a distinction between an elector and a voter** i.e. an elector is qualified to be chosen as a public representative.
- The Section 8 (1) and Section 8 (2) provide for **disqualification for convictions** of particular set of offences but Section 8 (3) provides for **disqualification only if the sentence is for a minimum period of two years and more.**

## 5.6 Atmanirbhar Bharat 3.0 Mission COVID Suraksha

Recently, the **Department of Biotechnology** has provided financial support as grant to vaccine manufacturing facilities under **Mission COVID Suraksha.**

**Mission COVID Suraksha**

- It is an **Indian COVID-19 Vaccine Development Mission** with end-to-end focus

from preclinical development through clinical development and manufacturing and regulatory facilitation.

- Under the mission, the grant will be provided to the **Department of Biotechnology (DBT) for Research & Development** of Indian COVID-19 vaccines.
- It is implemented by a dedicated Mission **Implementation Unit** at **Biotechnology Industry Research Assistance Council (BIRAC).**

**Significance of Mission COVID Suraksha**

- It will help the **development process** of approximately five to six Covid-19 vaccine candidates.
- It is aimed at **helping the manufacturers in getting licence** for vaccines and finally introduces them in the market.
- It aims at providing **end-to-end passage to vaccines** i.e. from preclinical stage to manufacturing.
- The aim of the project is to also **establish clinical trial sites** and strengthen the existing immunoassay laboratories, central laboratories and suitable facilities for animal studies.

**Objectives of Mission COVID Suraksha**

- **Accelerating** pre-clinical & clinical development;
- **Licensure** of COVID-19 vaccine candidates that are currently in clinical stages or ready to enter clinical stage of development, establishing clinical trial sites;
- **Supporting development** of common harmonized protocols, trainings, data management systems, regulatory submissions, internal and external quality management systems and accreditations;
- **Strengthening** the existing immunoassay laboratories, central laboratories; and
- **Suitable facilities** for animal studies, production facilities and other testing facilities to support COVID-19 vaccine development.

## 5.7 SAMVEDNA Platform

Recently, the Ministry of Women and Child Development has called for **SAMVEDNA Platform for children affected by COVID-19**.

## SAMVEDNA Platform

- SAMVEDNA is **Sensitizing Action on Mental Health Vulnerability through Emotional Development and Necessary Acceptance**.
- It is a T**oll-Free Helpline** launched to provide **psycho-social mental support for Children** affected during COVID 19 Pandemic.
- The **National Commission for Protection of Child Rights (NCPCR)** is providing Tele-Counselling to children through SAMVEDNA.
- The **tele-counselling** is being provided through a network of qualified Experts/Counselors/Psychologists.
- It is for **psychological support to children** to address their stress, anxiety, fear and other issues during the Pandemic.
- The tele counselling is provided to the **children under three categories**:
  - Children who are in Quarantine/isolation/COVID Care centers;
  - Children who have COVID positive parents or family members and near ones; and
  - Children who have lost their parents due to Covid-19 Pandemic
- It aims to **cater to the children from all over India** in various regional languages like Tamil, Telugu, Kannada, Oriya, Marathi, Gujarati, and Bengali etc.

## National Commission for Protection of Child Rights (NCPCR)

- It is a **statutory body** under the **Commissions for Protection of Child Rights (CPCR) Act, 2005**.
- It works under the aegis of **Ministry of Women and Child Development.**
- Its mandate is to ensure that **all Laws, Policies, Programmes, and Administrative Mechanisms** are in consonance with the Child Rights perspective as enshrined in the **Constitution of India** and also the **UN Convention on the Rights of the Child.**
- The Child is defined as a person in the **0 to 18 years age group**.
- It visualizes a rights-based perspective flowing into **National Policies and Programmes**, along with nuanced responses at the State, District and Block levels.

## 5.8 Defining Hate Speech

As there is no clear definition of what constitutes a "**Hate Speech**" in the **Indian Penal Code (IPC)**, the **Committee for Reforms in Criminal Laws** constituted by the Union Home Ministry to suggest reforms to the British-era IPC, is attempting for the first time to define such speech.

- **Hate Speech:**
  - In general, it **refers to words whose intent is to create hatred** towards a particular group, that group may be a community, religion or race.This speech may or may not have meaning, but is **likely to result in violence.**
  - The **Bureau of Police Research and Development** recently published a manual for investigating agencies on cyber harassment cases that **defined hate speech** as a **language that denigrates, insults, threatens or targets an individual based on their identity and other traits** (such as sexual orientation or disability or religion etc.).
  - In the **267th Report** of the **Law Commission of India**, hate speech is stated as **an incitement to hatred primarily against a group of persons** defined in terms of race, ethnicity, gender, sexual orientation, religious belief and the like.
  - In order to determine whether a particular instance of speech is a hate speech or not, the **context of the speech plays an important role.**
- **Major Reasons of Hate Speech:**
  - Individuals believe **in stereotypes** that are ingrained in their minds and these stereotypes lead them to believe that **a class or group of persons are inferior to them** and as such cannot have the same rights as them.
  - The **stubbornness to stick to a particular ideology** without caring for the right to co-exist peacefully adds further fuel to the fire of hate speech.
- **Indian Penal Provisions Related to Hate Speech:**
  - **Under Indian Penal Code:**
    - **Sections 153A and 153B of the IPC:** Punishes acts that cause enmity and hatred between two groups.
    - **Section 295A of the IPC:** Deals with punishing acts which

deliberately or with malicious intention outrage the religious feelings of a class of persons.

- **Sections 505(1) and 505(2):** Make the publication and circulation of content which may cause ill-will or hatred between different groups an offence.

- **Under Representation of People's Act:**
  - **Section 8 of the Representation of People's Act, 1951 (RPA):** Prevents a person convicted of the illegal use of the freedom of speech from contesting an election.
  - **Sections 123(3A) and 125 of the RPA:** Bars the promotion of animosity on the grounds of race, religion, community, caste, or language in reference to elections and include it under corrupt electoral practices.

- **Suggestion for Changes in IPC:**
  - **Viswanathan Committee 2019:**
    - **It proposed inserting Sections 153 C (b) and Section 505 A in the IPC** for incitement to commit an offence on grounds of religion, race, caste or community, sex, gender identity, sexual orientation, place of birth, residence, language, disability or tribe.
    - It **proposed punishment of up to two years along with Rs. 5,000 fine.**
  - **Bezbaruah Committee 2014:**
    - It **proposed amendment to Section 153 C IPC** (promoting or attempting to promote acts prejudicial to human dignity), punishable by five years and fine or both and **Section 509 A IPC** (word, gesture or act intended to insult member of a particular race), punishable by three years or fine or both.

Road ahead

- For a country like India with a massive population of diverse backgrounds and culture, **subjects like hate speech become a complex issue to deal with** as **it is**

**difficult to differentiate between free and hate speech.**

- Several factors are to be considered while restraining speeches like the number of strong opinions, offensive to certain communities, the effect on the values of dignity, liberty, and equality. Certainly, **there are laws for such atrocities but a major part of work is still left.**
- Therefore **giving a proper definition to hate speech would be the first step to deal with the menace** and other initiatives such as **spreading awareness amongst the public is the need of the hour.**

## SCIENCE AND TECHNOLOGY

### 6.1 SUTRA model for charting the trajectory of COVID-19

Recently, the Ministry of Science & Technology has announced that the scientists are working on **SUTRA model** for charting the trajectory of COVID-19.

**SUTRA Model**

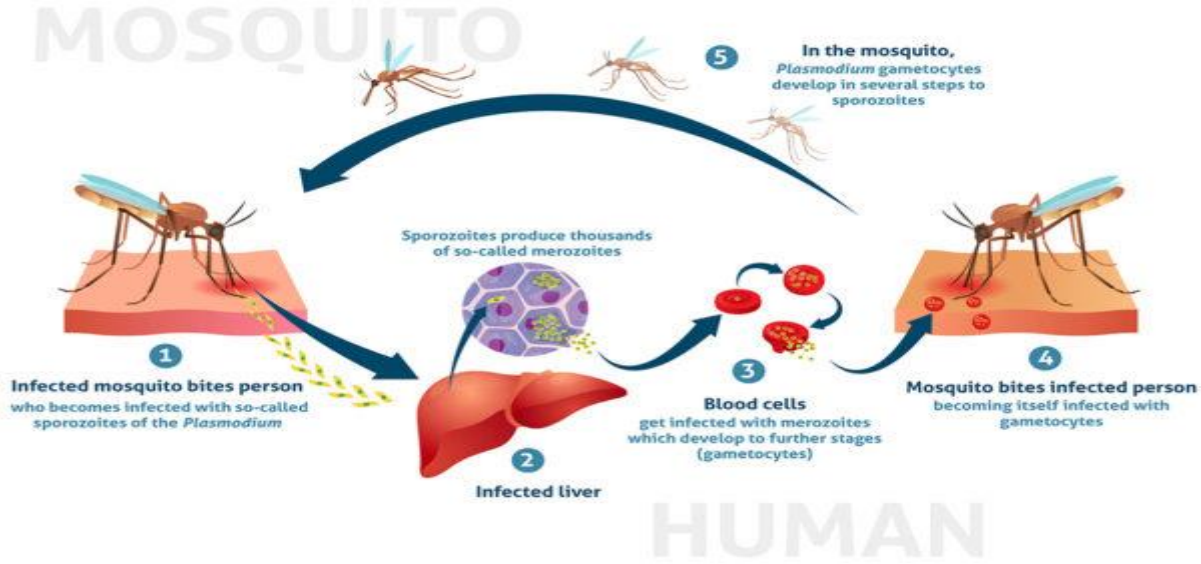
- It was **first released in 1984.**
- It is a **three-dimensional groundwater model** that simulates solute transport (i.e. salt water) or temperature in a subsurface environment.
- It is a **model for saturated-unsaturated, variable-density ground-water flow** with solute or energy transport.
- The **SUTRA (Saturated-Unsaturated Transport)** is a computer program that **simulates fluid movement** and the transport of either energy or dissolved substances in a subsurface environment.
- It employs a **weight grid** that is based on a finite element and integrated finite difference hybrid method framework.
- It has been used to **simulate the effects of saltwater intrusion, contaminant transport, and thermal pollution.**

### 6.2 R21/Matrix M: Malaria Vaccine Candidate

Recently, a malaria vaccine candidate **'R21/Matrix M'** has shown promise in phase 2b

clinical trials, with high efficacy at 77%.

- The previous version **'RTS-S' is a vaccine candidate against malaria** that has been in development for more than 30 years.
- It is being developed by **Walter Reed Institute of Research, GlaxoSmithKline and Bill and Melinda Gates Foundation** with the **PATH Malaria Vaccine Initiative.**
- It is designed to **stop the Plasmodium falciparum malaria parasite from entering the liver** and preventing the subsequent deadly blood stages.
- It **targets the liver stage protein** of the Plasmodium falciparum life cycle.
- The RTS-S is the first, and to date the only, vaccine to **reduce malaria in children.**




**R21/Matrix M**

- The new vaccine candidate, called R21/Matrix M, is a **modified version of RTS-S**.
- It has been developed by scientists at **University of Oxford**, the same location where the AstraZeneca Covid-19 vaccine was developed.
- It was the **first to reach WHO's goal** of at least 75% efficacy.

## 6.3 SpaceX Nighttime Splashdown

Recently, Elon Musk's SpaceX marked the **successful completion of its Crew-1 mission for NASA** after landing after successfully landing in the **Gulf of Mexico off the coast of Florida.**

- In May 2020, **NASA's SpaceX Demo-2** test flight lifted off for the ISS **carrying two astronauts** and splashed down on the Gulf of Mexico.
- The aim of this test flight was to see if **SpaceX capsules could be used on a regular basis** to ferry astronauts to and from the ISS.

**Crew 1 Mission**

- The Crew-1 was launched in November as the **first of six crewed missions between NASA and SpaceX** after the success of Demo-2.
- The Crew-1 team members joined members of **Expedition 64 and conducted microgravity studies** at the ISS.
- The mission is part of **NASA's Commercial Crew Program.**
    - The objective of Commercial Crew Program is to **make access to space easier in terms of its cost**, so that cargo and crew can be easily transported to and from the ISS.
- It was the **first operational flight of the SpaceX Crew Dragon spacecraft** on a Falcon 9 rocket to the ISS.

**Objectives of the Crew-1 Mission**

- The goals of the mission are the same as that of **Expedition 1 that lifted off 20 years ago.**
- The mission aims to **deliver new science hardware and experiments** that they will carry with them to space aboard the Crew Dragon spacecraft.
- An experiment aboard the Crew Dragon is a **student-designed experiment titled, "Genes in Space-7"** that aims to understand how spaceflight affects brain function.
- The mission will enable scientists to **understand the physical interactions of liquid, rocks and microorganisms, experiment on the role of microgravity on human health** etc.

**Crew-1's nighttime splashdown**

- The last US mission to **land astronauts to land on water in the dark** was the historic **Apollo 8.**
    - It was the **first human spaceflight to reach and orbit the Moon** in 1968.
    - The spacecraft **spent six days in space** before splashing into the Pacific Ocean near Hawaii before dawn.
- The advantage of landing in dark is **avoiding disturbance from private boats**, a safety risk.

## 6.4 Asiatic Lion tested for COVID-19

In a first in the country, eight **Asiatic lions in Hyderabad's Nehru Zoological Park (NZP)** have tested positive for the coronavirus.

**Asiatic Lion**

- There are **only several hundred Asiatic lions** in the wild, and they **only live in the Gir Forest, India.**
- Asian lions are **slightly smaller** than African lions.
    - Unlike African lions, the **males do not tend to live with the females of their pride u**nless they're mating or have a large kill.
- Asian lions used to range from **Turkey, across Asia, to eastern India**, but the rise of firearms across the world meant that they were hunted to near-extinction for sport.
- The most distinguishing characteristic of the Asiatic lion is the **longitudinal fold of skin that runs along its belly** which is **absent in African lions.**
- It is protected under **Schedule 1** of the **Wildlife Protection Act, 1972.**
- It is listed as **'Endangered'** in the **IUCN Red List of Threatened Species**.

## 6.5 Emergency Use Authorisation (EUA) for Casirivimab and Imdevimab

Recently, the **Central Drugs Standards Control Organisation** has provided an **emergency use authorisation (EUA) for casirivimab and imdevimab** for the treatment of mild to

moderate Covid-19 in India.

**Key Highlights**

- The approval is based on data filed for the EUA in the US and scientific opinion of **Committee for Medicinal Products for Human Use (CHMP) in European Union.**
- The EUA will now enable **Roche to import globally manufactured product batches to India** that will be marketed as well as distributed in India through a strategic partnership with Cipla Ltd.
- The antibody cocktail is to be **administered to adults and paediatric patients** (12 years or older, weighing at least 40 kg), who are confirmed to be infected with the novel coronavirus.
- The treatment will be **complementary to the ongoing vaccination drive** and support the fight against the pandemic in India.

**Casirivimab and Imdevimab**

- Casirivimab and Imdevimab are **human immunoglobulin G-1 (IgG1) monoclonal antibodies** produced by recombinant DNA technology.
- The antibody cocktail (Casirivimab and Imdevimab) is seen **useful for high-risk patients**before their condition worsens.
- Casirivimab and imdevimab significantly **shortened the duration of symptoms by four days** during the clinical trials.
- Monoclonal antibodies are **laboratory-made proteins that mimic the immune system's ability to fight** off harmful pathogens such as viruses.
- Casirivimab and imdevimab are **monoclonal antibodies** that are specifically directed **against the spike protein of SARS-CoV-2.**
    - They are **designed to block the virus' attachment** and entry into human cells.
- It should be **refrigerated unopened vials at 2°C to 8°C (36°F to 46°F)** in the individual original carton to protect from light.

**Central Drugs Standards Control Organisation (CDSCO)**

- It is the **Central Drug Authority** for discharging functions assigned to the Central Government under the **Drugs and Cosmetics Act.**
- It has **six zonal offices, four sub-zonal offices, 13 port offices** and **seven laboratories** under its control.
- The **major functions** of CDSCO are:
    - Regulatory control over the import of drugs;
    - Approval of new drugs and clinical trials;
    - Meetings of Drugs Consultative Committee (DCC) and Drugs Technical Advisory Board (DTAB); and
    - Approval of certain licenses as Central License Approving Authority

## 6.6 Significance of 5G Trial for Indian Telecommunication

Recently, the Department of Telecommunications has **allowed private telcompanies (telcos) to start trials for 5G technology** as well as its applications in various sectors.

- It allowed private telcos **Bharti Airtel, Reliance Jio Infocomm and Vi** and well as state-run telco **Mahanagar Telephone Nigam Limited (MTNL)** to start trials for 5G technology.

**Fifth Generation (5G)**

- 5G or fifth generation is the **latest upgrade in the long-term evolution mobile broadband networks**.
- 5G mainly works in **3 bands, namely low, mid and high-frequency spectrum.**

**Why are the trials for 5G technology important for telcos?**

- The telecom market in India is left with **only three private telcos**, with the rest having surrendered to the **low returns on investments over the years.**
- Apart from the private telecommunication companies, the two state-run companies, **MTNL and Bharat Sanchar Nigam Limited (BSNL) have also survived but are making losses.**
- It is pertinent fo**r telcos to start offering the new 5G technology** as soon as

possible in order to increase their average revenue per user.

**What will 5G trials in India entail for now?**

- In the initial phase, the 5G trials will be for 6 months, including a 2 month period for**procurement and setting up of the equipment.**
    - In these 6 months, telcos will be required to test their set up in urban areas, semi-urban areas as well as rural areas.
- The telcos will be provided with experimental spectrum in various bands, such as the**mid-band of 3.2 GHz to 3.67 GHz, the millimeter wave band of 24.25 GHz to 28.5 GHz, and others.**
- The **low band spectrum** has shown great promise in terms of coverage and speed of internet and data exchange.
    - It implies that while **telcos can use and install it for commercial cellphone users** who may not have specific demands for very high speed internet, the low band spectrum may not be optimal for specialised needs of the industry.
- The **mid-band spectrum** offers higher speeds compared to the low band, but has limitations in terms of coverage area and penetration of signals.
    - It may be used by **industries and specialised factory units** for building captive networks that can be moulded into the needs of that particular industry.
- The **high-band spectrum** offers the highest speed of all the three bands, but has extremely limited coverage and signal penetration strength.
    - The i**nternet speeds in the high-band spectrum of 5G** has been tested to be as high as 20 Gbps (giga bits per second).

## 6.7 Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

Recently, a new observational study of more than 72,000 people in the UK published that the **use of non-steroidal anti-inflammatory drugs (NSAIDs) does not lead to higher rates of death** or severe disease in patients who are hospitalised with Covid-19.

- The International Severe Acute Respiratory and emerging Infection Consortium

Clinical Characterisation Protocol United Kingdom study found evidence that the **continued use of NSAIDs in patients with Covid-19 is safe.**

- The study found that the **proportion of death was similar regardless of whether patients had taken the drugs or not** i.e. 30.4 percent for those who had and 31.3 percent for those who had not.
    - In patients with rheumatological disease, the **use of NSAIDs did not increase mortality**.
- It also found that those who took NSAIDs were **no more likely to be admitted to critical care**, need invasive or non-invasive ventilation, or require oxygen.

**Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)**

- **Prostaglandins are a family of chemicals that are produced by the cells** of the body and have several important functions.
    - They **promote inflammation** that is necessary for healing, but also results in pain, and fever.
- The NSAIDs **block the cyclooxygenase (COX) enzymes** and reduce prostaglandins throughout the body.
- The NSAIDs are **common treatments for acute pain and rheumatological diseases**such as rheumatoid arthritis and osteoarthrosis.
- The **NSAID family of anti-inflammatory drugs** includes those widely used by the general public like ibuprofen, an active substance in common drugs, such as Nurofen or Advil or ketoprofen.

**Working of NSAIDs**

- They **block the production of certain body chemicals** that cause inflammation.
- They are **good at treating pain caused by slow tissue damage**, such as arthritis pain.
- They also **work well fighting back pain, menstrual cramps and headaches**.
- They work like **corticosteroids (also called steroids)**, without many of the side effects of steroids.

## 6.8 'Black fungus' in Covid patients

Recently, the **black fungus** is being detected relatively frequently among Covid-19 patients in some states.

- The experts in the **national Covid-19 task force** have issued an evidence-based advisory on the disease with a number of black fungus cases detected in Delhi, Maharashtra and Gujarat.

**Black Fungus disease**

- It is a **rare but serious fungal infection** known as **mucormycosis.**
- It is caused by a **group of moulds known as mucormycetes** present naturally in the environment.
- It mainly **affects people who are on medication** for health problems that reduces their ability to fight environmental pathogens.
- The **sinuses or lungs of such individuals get affected** after they inhale fungal spores from the air.

**Effects of Black Fungus disease**

- The warning signs include **pain and redness around the eyes or nose**, with **fever, headache, coughing, shortness of breath, bloody vomits,** and altered mental status.
- According to the advisory, infection with **mucormycetes should be suspected** when there is:
    - Sinusitis: nasal blockade or congestion, nasal discharge (blackish/bloody);
    - Local pain on the cheek bone, one-sided facial pain, numbness or swelling;
    - Blackish discoloration over bridge of nose/palate;
    - Loosening of teeth, jaw involvement;
    - Blurred or double vision with pain;
    - Thrombosis, necrosis, skin lesion;
    - Chest pain, pleural effusion, worsening of respiratory symptoms.

- The experts advise that **one should not count all cases of blocked nose as cases of bacterial sinusitis**, particularly in the context of immunosuppression and/or Covid-19 patients on immunomodulators.

**Treatment of Black Fungus disease**

- It is **treated with antifungals** and mucormycosis may eventually require **surgery.**
- The doctors have said that it is of **utmost importance to control diabetes, reduce steroid use, and discontinue immunomodulating drugs**.
- The treatment includes infusion of **normal saline (IV) before infusion of amphotericin B and antifungal therapy,** for at least 4-6 weeks.

**Types of mucormycosis**

- **Rhinocerebral** (sinus and brain) mucormycosis is an infection in the sinuses that can spread to the brain.
    - This form of mucormycosis is most common in people with uncontrolled diabetes and in people who have had a kidney transplant.
- **Pulmonary** (lung) mucormycosis is the most common type of mucormycosis in people with cancer and in people who have had an organ transplant or a stem cell transplant.
- **Gastrointestinal mucormycosis** is more common among young children than adults, especially premature and low birth weight infants less than 1 month of age, who have had antibiotics, surgery, or medications that lower the body's ability to fight germs and sickness.
- **Cutaneous (skin) mucormycosis** occurs after the fungi enter the body through a break in the skin (for example, after surgery, a burn, or other type of skin trauma).
    - This is the most common form of mucormycosis among people who do not have weakened immune systems.
- **Disseminated mucormycosis** occurs when the infection spreads through the bloodstream to affect another part of the body.
    - The infection most commonly affects the brain, but also can affect other organs such as the spleen, heart, and skin.

## 6.9 C-reactive protein (CRP) Test

Recently, a large number of doctors are recommending the **C-reactive protein (CRP) test**to those Covid positive patients who are in home isolation with moderate to mild symptoms.

**C-reactive protein (CRP) Test**

- It is a **blood test** mainly conducted for **patients who are hospitalised** for Covid virus treatment.
- It is **not a diagnostic test** but it has prognostic value.
- It tells about **inflammation level in the body** during any ailment and indicates about the infection level.
- The **higher value of CRP level** than the normal level indicates that the **infection is increasing.**
- It is a marker which shows the **level of C-reactive protein**, which is made by the liver, in the blood.

**Recommendation of C-reactive protein (CRP) Test**

- The doctors are conducting it **mandatorily for the patients with critical conditions who are in hospital care**, because it is one of the indicators showing the body's reaction to the ongoing treatment.
- If the **CRP is normal** then the **patient's body is reacting to the treatment positively**.
- If the **CRP is higher** than the required, then **doctors need to check the infection level**in the body through other tests like CT scan.

**Why C-reactive protein (CRP) Test is recommended for mild covid patients?**

- The **CRP is not necessary** unless and until the patient is suffering with the same symptoms even after passing of 5 days of his/her contracting the virus.
- The doctors recommend it for at least **twice on an interval of 4-5 days** just to check the inflammation so as to judge about the further complication level.

**Significance of C-reactive protein (CRP) Test**

- The conduction of CRP test twice on an interval of 4-5 days reveals the **CRP level**

**in the patients on the basis of which doctors can decide the next course of action.**

- A CRP test **measures the amount of CRP in the blood to detect inflammation** due to acute conditions or to monitor the severity of disease in chronic conditions.
- It is a **non-specific indicator of inflammation** and one of the most sensitive acute phase reactants.

**What is CRP test used for?**

- A CRP test may be used to **find or monitor conditions** that cause inflammation which include:
    - Bacterial infections, such as sepsis, a severe and sometimes life-threatening condition
    - A fungal infection
    - Inflammatory bowel disease, a disorder that causes swelling and bleeding in the intestines
    - An autoimmune disorder such as lupus or rheumatoid arthritis
    - An infection of the bone called osteomyelitis.

## 6.10 Sinopharm COVID-19 Vaccine

Recently, the WHO has implied that the **Sinopharm COVID-19 vaccine** can now be used in immunisation drives worldwide for emergency use.

**Sinopharm COVID-19 Vaccine**

- It is an **inactivated coronavirus vaccine** developed by **China.**
- It is the f**irst non-Western vaccine** to get WHO backing.
- It will possibly be **used for the COVAX programme**, under which vaccines are supplied to low and middle-income countries.
- **Sinopharm, Covaxin and Sinovac** (also developed by China) are the only ones that use**inactivated virus.**

- The others such as **Pfizer-BioNTech and Moderna are mRNA vaccines**, whereas **Oxford-AstraZeneca, Sputnik and Johnson and Johnson's** single-dose vaccines use a **viral vector.**

**Working of Sinopharm COVID-19 Vaccine**

- The inactivated vaccines take the **disease-carrying virus** (in this case SARS-CoV-2) and kill it using heat, chemicals or radiation.
- The WHO notes that these **vaccines take longer to make and might need two or three doses** to be administered.

**Sinopharm's Protection from COVID-19**

- As per WHO, Sinopharm has an **efficacy of about 79 percent** for symptomatic and hospitalised disease for all age groups.
- The WHO notes that since **few adults over the age of 60 years** were enrolled, the efficacy in the age group is not clear.
- The **WHO has not recommended an upper age limit on the use** of this vaccine because the immunogenicity data suggest the vaccine is likely to have a protective effect in older persons.
- The WHO has recommended that the **vaccine be administered to adults of the age of 18 and above** in a two-dose schedule with a gap of three to four weeks.

**Significance of WHO's emergency use approval**

- The **WHO's emergency use listing (EUL)** assesses the **suitability of novel health products** during public health emergencies.
- The **Pfizer-BioNTech coronavirus vaccine was given the EUL approval** on December 31, 2020 and the **Oxford-AstraZeneca vaccine was approved by the WHO** on February 15 2021.
- The objective is to **make medicines, vaccines and diagnostics available** as rapidly as possible to address the emergency, while adhering to stringent criteria of safety, efficacy and quality.
- The assessment weighs the **threat posed by the emergency as well as the benefit**that would accrue from the use of the product against any potential risks.
- The approval is given after **assessment of late phase II and phase III clinical trial**

**data**and data related to safety, efficacy, quality and risk management.

## 6.11 DCGI approves anti-COVID drug

Recently, the **Drugs Controller General of India (DCGI)** has approved the **DRDO's anti-COVID oral drug** as an adjunct therapy in moderate to severe coronavirus patients.

- In April 2020, during the first wave of the pandemic, **INMAS-DRDO scientists conducted laboratory experiments** with the help of Centre for Cellular and Molecular Biology.
- The DCGI's Central Drugs Standard Control Organisation (CDSCO) permitted **Phase-II clinical trial of 2-DG in COVID-19 patients** in May 2020.
- In Phase-II trials conducted during May to October 2020, the **drug was found to be safe in COVID-19 patients** and showed significant improvement in their recovery.
- In 2-DG arm, a significantly **higher proportion of patients improved symptomatically** and became free from supplemental oxygen dependence by Day-3 in comparison to SoC.

**Anti-COVID drug by DRDO**

- The clinical trials of the **drug 2-deoxy-D-glucose (2-DG)** showed that it helps in faster recovery of hospitalised patients and reduces supplemental oxygen dependence.
- The **anti-COVID-19 therapeutic application of 2-DG drug** has been developed by the Institute of Nuclear Medicine and Allied Sciences (INMAS).
- The **drug comes in powder form** in a sachet and is taken orally by dissolving it in water.
- It accumulates in the **virus-infected cells and prevents virus growth** by stopping viral synthesis and energy production.
- The patients treated with **2-DG showed faster symptomatic cure** than the standard of care (SoC) on various endpoints.

## 6.12 NASA's OSIRIS-Rex Mission

Recently, the NASA's **OSIRIS-Rex spacecraft** will depart **asteroid Bennu**, and start its two-

year long journey back to Earth.

**OSIRIS-Rex Mission**

- It is NASA's **Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer** (OSIRIS-REx).
- In October 2020, the spacecraft briefly touched **asteroid Bennu**, from where it collected **samples of dust and pebbles.**
- It is NASA's first mission meant to **return a sample from the ancient asteroid.**
- The mission is essentially a **seven-year-long voyage** and will conclude when at least **60 grams of samples are delivered** back to the Earth.
- As per NASA, the mission promises to **bring the largest amount of extraterrestrial material** back to our planet since the Apollo era.
- The mission was **launched in 2016, it reached its target in 2018** and since then, the spacecraft has been trying to match the velocity of the asteroid using small rocket thrusters.
- The spacecraft contains **five instruments** meant to explore Bennu including cameras, a spectrometer and a laser altimeter.

**Asteroid Bennu**

- The Asteroids are **rocky objects that orbit the Sun**, much smaller than planets.
- Bennu is an asteroid about as **tall as the Empire State Building**, located about 200 million miles away from the Earth.
- The asteroid was discovered by a team from the NASA-funded **Lincoln Near-Earth Asteroid Research team in 1999**.
- It is believed to have been **born in the Main Asteroid belt** between Mars and Jupiter.
- The asteroid is coming closer to Earth because of **gravitational tugs from other celestial objects** and the **slight push asteroids get when they release absorbed sunlight.**

**Significance of Asteroid Bennu**

- It is considered to be an **ancient asteroid** that has not gone through a lot of

composition-altering change through billions of years.

- It implies that below its **surface lie chemicals and rocks** from the birth of the solar system.

- The scientists and researchers are interested in studying this asteroid as it might give them **clues about the origins of the solar system**, **the sun, the Earth and the other planets.**
- It is a **B-type asteroid**, implying that it contains significant amounts of **carbon and various other minerals.**
- The asteroid reflects about **four per cent of the light that hits it**, which is very low when compared with a planet like Venus, which reflects about 65 per cent of the light that hits it.
- Around 20-40 percent of **Bennu's interior is empty space** and scientists believe that it was formed in the first 10 million years of the solar system's creation, implying that it is roughly 4.5 billion years old.

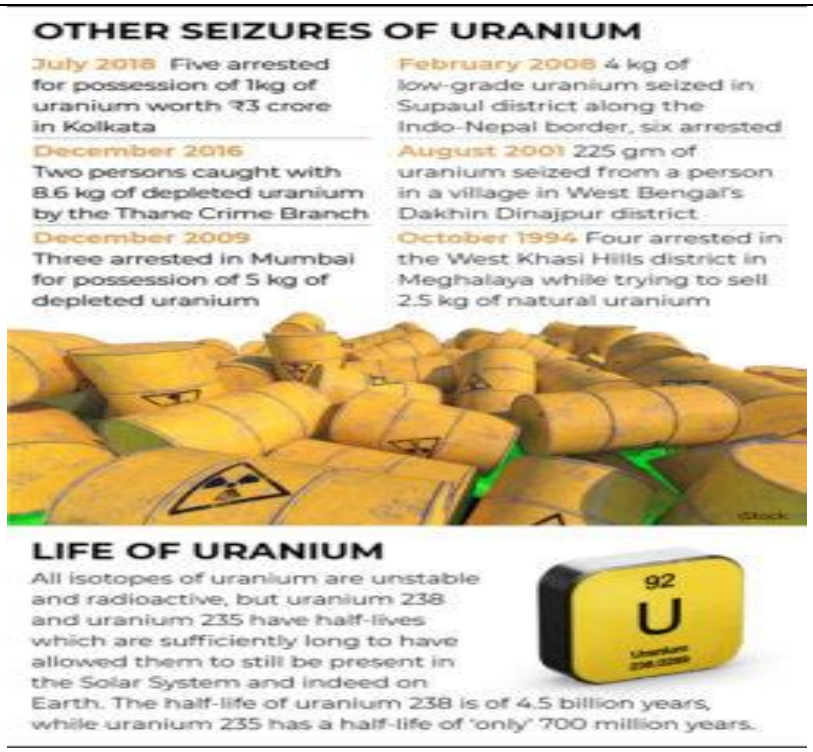
**Asteroid was named Bennu**

- Bennu is named after an **Egyptian deity.**
- The name was suggested by a nine-year-old boy from North Carolina in 2013, who won **NASA's "Name that Asteroid" competition.**

## 6.13 ATS seizes 7kg uranium worth Rs 21 crore from a scrap dealer; here's what happened

Two people were arrested under the **Atomic Energy Act, 1962** for possessing uranium without licence and selling it illegally.

On testing, the sample was **confirmed as natural uranium by Bhabha Atomic Research Centre (BARC).**


OTHER SEIZURES OF URANIUM
July 2018 Five arrested for possession of 1kg of uranium worth ₹3 crore in Kolkata
December 2016 Two persons caught with 8.6 kg of depleted uranium by the Thane Crime Branch
December 2009 Three arrested in Mumbai for possession of 5 kg of depleted uranium
February 2008 4 kg of low-grade uranium seized in Supaul district along the Indo-Nepal border, six arrested
August 2001 225 gm of uranium seized from a person in a village in West Bengal's Dakhin Dinajpur district
October 1994 Four arrested in the West Khasi Hills district in Meghalaya while trying to sell 2.5 kg of natural uranium
LIFE OF URANIUM
All isotopes of uranium are unstable and radioactive, but uranium 238 and uranium 235 have half-lives which are sufficiently long to have allowed them to still be present in the Solar System and indeed on Earth. The half-life of uranium 238 is of 4.5 billion years, while uranium 235 has a half-life of 'only' 700 million years.
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**Uranium:**

- Uranium **occurs naturally in low concentrations** in soil, rock and water. It is **a hard, dense, malleable, ductile, silver-white, radioactive metal.**
    - Uranium metal has a **very high density.**
- When finely divided, it **can react with cold water.** In **air** it is coated by **uranium oxide,** tarnishing rapidly.
- It can **form solids solutions and intermetallic compounds** with many of the metals.
- **Applications:**
    - **Energy Production:** The main use of uranium in the civilian sector is to fuel commercial nuclear power plants for generation of **nuclear energy.**
        - This requires uranium to be **enriched with the uranium-235 isotope** and the chain reaction to be controlled so that the energy is released in a more manageable way.

- **Making Atomic Bomb:** The first atomic bomb used in warfare was an uranium bomb.
    - This bomb contained **enough of the uranium-235 isotope** to start a runaway chain reaction which in a fraction of a second caused a large number of the uranium atoms to undergo fission, thereby releasing a fireball of energy.
- **Used as Shield against Radiation:** Depleted uranium is also used as shield against radiation in **medical processes**using radiation therapy and also while **transporting radioactive materials.**
    - Though itself radioactive, uranium's high density makes it effective in halting radiation.
- **Used as Counterweights in Industry:** Its high density also makes it useful as counterweights in aircraft and industrial machinery.
- **Radiometric Dating:** The **isotope uranium 238** is used to estimate the age of the earliest igneous rocks and for other types of radiometric dating.
- **Fertilizer: Phosphate fertilizers** are made from material typically high in uranium, so they usually contain high amounts of it.

- **Health and Environmental Impacts:**
    - **Impact on Health:** Potentially depleted uranium has both chemical and radiological toxicity with the two important target organs being the **kidneys and the lungs.**
    - **Impact on Environment:** Uranium mining facilities produce tailings that generally are disposed of in near surface impoundments close to the mine.
        - These tailings pose serious environmental and health risks in the form of **Radon emission, windblown dust dispersal and leaching of contaminants** including heavy metals and arsenic into the water.

- **Uranium Deposits In India:**
    - In India, Uranium deposits occur in the **Dharwar rocks.**
    - It occurs along the **Singhbhum Copper belt (Jharkhand); Udaipur, Alwar** and **Jhunjhunu districts** of Rajasthan, **Durg district** of Chhattisgarh, **Bhandara district** of Maharashtra and **Kullu district** of Himachal Pradesh.
    - Significant quantities of reserves have been recently discovered in parts of **Andhra Pradesh and Telangana** between Seshachalam forest and Sresailam (Southern edge of Andhra to Southern edge of Telangana).
- **Legal Framework in India:**
    - In pursuance to **entry at serial No. 54 of List I (Union List),** the Parliament has passed **'The Mines & Minerals (Development and Regulation) Act, 1957 (MMDR Act)'.**
        - However, with respect to **minor minerals,** the **rulemaking powers have been delegated to the States** through this Act.
        - Since Uranium is a major mineral, it is **managed by the Union Government** under provisions of **MMDR Act.**
    - The policy and legislation relating to Major minerals are managed by the Ministry of Mines, but **Uranium being an atomic mineral is managed by the Department of Atomic Energy (DAE).**
        - The **Atomic Energy Act, 1962** seeks to provide standards of controlling radioactive substances and plants and measures to prevent radiation accidents, retain public safety, assure cautious disposal of radioactive wastes, and so on.
    - Many of these mineral deposits are found in rich forest reserves and thus **approval of the Union Ministry of Environment, Forest and Climate Change** becomes necessary.

**Bhabha Atomic Research Centre**

- Dr. Homi Jehangir Bhabha conceived the Nuclear Program in India. Dr Bhabha established the Tata Institute of Fundamental Research (TIFR) for carrying out nuclear science research in 1945.

- To intensify the effort to exploit nuclear energy for the benefit of the nation, Dr Bhabha established the Atomic Energy Establishment, Trombay (AEET) in January 1954 for a multidisciplinary research program essential for the ambitious nuclear program of India. AEET was renamed Bhabha Atomic Research Centre (BARC) in 1966.

## 6.14 Amphotericin B

A sudden increase in demand has been observed in some states for **Amphotericin B** which is being actively prescribed by the physicians **to patients suffering from Mucormycosis**, a post COVID complication.

**Amphotericin B**

- It is **fungistatic or fungicidal** depending on the concentration obtained in body fluids and the susceptibility of the fungus.
- The antibiotic is **without effect on bacteria, rickettsiae, and viruses.**
- The drug acts by **binding to sterols (ergosterol)** in the cell membrane of susceptible fungi.
- It creates a **transmembrane channel** and the resultant change in membrane permeability allowing leakage of intracellular components.
- Amphotericin B, a polyene, **binds irreversibly to ergosterol**, resulting in disruption of membrane integrity and ultimately cell death.

**Importance of Amphotericin B**

- It shows a **high order of in vitro activity** against many species of fungi.
- **Histoplasma capsulatum, Coccidioides immitis, Candida species, Blastomyces dermatitidis, Rhodotorula, Cryptococcus neoformans, Sporothrix schenckii, Mucor mucedo, and Aspergillus fumigatus** are all inhibited by concentrations of amphotericin B.
- It is a **polyene antifungal antibiotic** produced by **Streptomyces nodosus**, with antifungal activity.

## 6.15 Sputnik V: Third COVID Vaccine in India

Recently, **Dr Reddy's Laboratories (DRL)** has said that it had launched **Sputnik V in India.**

- The vaccine is currently the **second most expensive Covid-19 jab** in the country.

**Sputnik V**

- It is made by the **Gamaleya Research Institute of Epidemiology and Microbiology in Moscow.**
- It is a two-dose Covid-19 vaccine using a **similar platform to Covishield.**
- **Unlike Covishield**, which uses a weakened common cold "adenovirus" that affects chimpanzees, **Sputnik V** makes use of **two different human adenoviruses.**
- The vaccine has an **efficacy of over 91 per cent.**
    - It implies that Sputnik V has the **ability to bring down symptomatic Covid-19 cases by over 91 per cent** in those vaccinated compared with those who have not received a Covid vaccine.
- In India, Dr Reddy's Laboratories is the **local distribution partner** for Sputnik V.
- It works on a **complex biotechnology** in which another virus is employed to carry the DNA code required for triggering immune response in human cells.

**Working of Sputnik V Vaccine**

- It uses **two different viruses** that cause the **common cold (adenovirus) in humans.**
    - The adenoviruses are **weakened** so they cannot replicate in humans and cannot cause disease.
- They are also modified so that the **vaccine delivers a code** for making the coronavirus spike protein.
    - It aims to ensure that when the **real virus tries to infect the body**, it can mount an immune response in the form of antibodies.
- Sputnik uses a **different vector for each of the two shots** in a course of vaccination.

- It provides **immunity with a longer duration** than vaccines using the same delivery mechanism for both shots.

## 6.16 Dengue: How to the identify, treat and prevent the mosquito-borne disease

With multiple cities recording a high number of dengue-related cases every year, it is important to know about the disease.

- **Dengue:**
    - Dengue is a **mosquito-borne tropical disease** caused by **the dengue virus (Genus Flavivirus)**, transmitted by several species of mosquito within the **genus Aedes**, principally **Aedes aegypti.**
        - This mosquito also transmits **chikungunya**, **yellow fever** and **Zika infection.**
    - There are 4 distinct, but closely related, serotypes (separate groups within a species of microorganisms that all share a similar characteristic) of the virus that cause dengue **(DEN-1, DEN-2, DEN-3 and DEN-4).**
- **Symptoms:**
    - Sudden high fever, severe headaches, pain behind the eyes, severe bone, joint, and muscle pain, etc.
- **Diagnosis and Treatment:**
    - Diagnosis of dengue infection is done with a blood test.
    - There is no specific medicine to treat dengue infection.
- **Status of Dengue:**
    - Incidence of dengue has **grown dramatically around the world** in recent decades, with a vast majority of cases under-reported, according to the **World Health Organization (WHO).**
    - WHO estimates 39 crore dengue virus infections per year, of which 9.6 crore show symptoms.
    - India registered over 1 lakh dengue cases in 2018 and over 1.5 lakh cases in 2019, according to the **National Vector-Borne Disease Control**

**Programme (NVBDCP).**

- NVBDCP is the central nodal agency for prevention and control of **six vector borne diseases** i.e. Malaria, Dengue, Lymphatic Filariasis, Kala-azar, Japanese Encephalitis and Chikungunya in India. It works under the Ministry of Health and Family Welfare.

- **Controlling Dengue Using Bacteria:**
  - Recently researchers from the **World Mosquito Program** have used mosquitoes infected with **Wolbachia bacteria to successfully control dengue** in Indonesia.
  - **Method:**
    - The scientists infected some mosquitoes with Wolbachia and then released them in the city where they bred with local mosquitoes, until nearly all mosquitoes in the area were carrying Wolbachia bacteria. This is called the **Population Replacement Strategy.**
    - At the end of 27 months, the researchers found that the incidence of dengue was 77% lower in areas where Wolbachia-infected mosquitoes had been released, as compared to areas without such deployments.
- **Dengue Vaccine:**
  - The dengue vaccine CYD-TDV or **Dengvaxia** was approved by the US Food & Drug Administration in 2019, the **first dengue vaccine** to get the regulatory nod in the US.
    - Dengvaxia is basically a **live, attenuated dengue virus** which has to be administered in people of ages 9 to 16 who have laboratory-confirmed previous dengue infection and who live in endemic areas.

## 6.17 Winchcombe Meteorite

Recently, a piece of the **Winchcombe meteorite** that touched down in the town of **Winchcombe in Gloucestershire in the UK** in February 2021 will be displayed at the **National History Museum**.

**Meteorite**

- NASA notes that the **difference between a meteor, meteorite and meteoroid** is nothing but **where the object is**.
- Meteoroids are objects in space that range in size from **dust grains to small asteroids.**
- When **meteoroids enter the Earth's atmosphere** they are called **meteors.**
    - If a **meteoroid** enters the Earth's atmosphere and **hits the ground**, it is called a **meteorite.**

**Discovery of Winchcombe Meteorite**

- The piece of meteorite was found in a field by one Mira Ihasz and a team from the**University of Glasgow.**
- It is a **103 gram fragment of black rock** resembling coal.

**Significance of Winchcombe Meteorite**

- It dates back to the **birth of the solar system** nearly 4.5 billion years ago.
- It may offer scientists and researchers clues about the **beginning of the solar system and maybe even the Earth.**

## 6.18 COVID-19 Drug by DRDO

Recently, the Defence Minister Rajnath Singh and Health Minister Dr Harsh Vardhan have released the **first batch of the COVID-19 Drug by DRDO '2DG'.**

**2DG Drug**

- It is an **indigenously developed anti-Covid-19 drug** called **2-deoxy-D-glucose** or **'2-DG'.**
- The national drug regulator, Drugs Controller General of India (DCGI), had cleared the**formulation for emergency use as an adjunct therapy** in moderate to severe Covid-19 patients.

**Formulation of 2DG Drug**

- 2-DG has been developed by the **Institute of Nuclear Medicine and Allied Sciences (INMAS),** New Delhi.
- INMAS is a lab of the **Defence Research and Development Organisation (DRDO)**, in collaboration with Hyderabad-based pharma company **Dr Reddy's Laboratories (DRL).**

**Working of 2DG Drug**

- The clinical trial data show that the **molecule helps in faster recovery of patients hospitalised with Covid-19**, and reduces their dependence on supplemental oxygen.
- The **drug accumulates in virus-infected cells**, and prevents the growth of the virus by stopping viral synthesis and energy production.
- Its selective accumulation in **virally-infected cells makes this drug unique.**

**Advantages of 2DG Drug**

- According to the government, **2-DG being a generic molecule and an analogue of glucose**, it can be easily produced and made available in large quantities.
- The **drug is available in powder form** in a sachet, and can be taken orally after dissolving in water.

## 6.19 Storage Conditions for Pfizer-BioNTech Vaccine

Recently, the **European Medicines Agency (EMA)** has recommended a change to the **approved storage conditions** of the Pfizer-BioNTech COVID-19 vaccine.

- In February, the **US Food and Drug Administration (FDA) had allowed undiluted vials of the vaccine** to be stored at conventional temperatures for a period of up to two weeks.
- The US and Singapore approved the **Pfizer-BioNTech vaccine for use in children** between the ages of 12-15 years.

**What is the change in the storage of Pfizer-BioNTech Vaccine?**

- An **unopened thawed vial** of the Pfizer-BioNTech vaccine can be stored between **2-8 degrees Celsius for up to a month**.

- It implies that it can be **stored in a regular refrigerator** once it has been taken out of the deep freeze.
- Before this, an **unopened thawed vaccine vial** could be kept in a regular refrigerator for a period of **only up to five days.**

- It i**ncreased flexibility in storing and handling of the vaccines** is expected to positively impact the vaccine rollout in the EU.

**Why do mRNA vaccines need to be stored at such low temperatures?**

- The mRNA vaccines **need to be stored at much lower temperatures** than some other kind of COVID-19 vaccines because **RNA is much less stable than DNA.**
- The second reason for the **relative instability of RNA is because of its shape**, which is a single strand, while DNA is expressed as a double-stranded helix.

**Administration of Pfizer/BioNTech vaccine**

- The mRNA vaccine called BNT162b2 was **initially meant for individuals who are 16 years or older** and is administered in two doses of 30 μg each.
- The vaccine is injected into the person's upper arm and takes a few weeks after the completion of the second dose to work.

**How does the Pfizer/BioNTech vaccine work?**

- One of the essential ingredients of this vaccine is the **messenger RNA or mRNA, which carries instructions** to create the SARS-CoV-2 virus's so-called spike protein.
    - Once the mRNA vaccine is injected into the body, it instructs the **body's cells to create copies of this spike protein**.
- The idea is to **trigger the body's immune system response** similar to if the individual had actually been infected by the virus.
- Once the vaccine is able to trigger this response, the immune system should be able to **produce the antibodies necessary to fight the infection.**

**Ingredients in the Pfizer-BioNTech COVID-19 Vaccine**

- The ingredients are **mRNA, lipids, potassium chloride, monobasic potassium phosphate, sodium chloride, dibasic sodium phosphate dihydrate**, and **sucrose.**

## 6.20 Protein–Antibody Conjugates

Recently, the researchers from University of Massachusetts have tested the mechanism **'Protein–Antibody Conjugates'** in cell lines in the lab.

- The new concept, Protein– Antibody Conjugates or PACs, combines **two different approaches** to drug delivery:
    - **One is biologics**, where the idea is to target a defective protein in the system by delivering proteins to it.
    - The other approach is to **use antibodies for drug delivery**.
- The antibodies are something the **body produces to detect a foreign substance** inside the body.
- The Protein–antibody conjugates or PACs, developed by the group, which have a **protein attached to the antibody** such as pancreatic cancer cells.

**Significance of Protein–Antibody Conjugates**

- The antibody plays the role of the **address and indicates the cell** where the drug should precisely be delivered.
- The **biology involves complexity** and this method may well fail if it is not tuneable.
- It combines concepts of **biologics and antibody–drug conjugates** to produce protein– antibody conjugates that can be used for targeted drug delivery.

**Antibody conjugation**

- Antibody conjugation, also known as **antibody labeling**, is a technique for **modification of antibodies** which involves with the attachment of a specific tag to an antibody.
- These labeled antibodies can be used to **isolate and purify a protein of interest from a complex mixture**, usually cells, tissues or whole organisms.
- **Horseradish peroxidase (HRP)** is a commonly used enzyme for conjugation of antibodies.

## 6.21 China launches new satellite to monitor ocean environment

Recently, China has launched a Long March-4B rocket carrying the **Haiyang-2D (HY-2D) satellite** from the Jiuquan Satellite Launch Centre in northwest China.

- China has independently developed and launched **seven Haiyang satellites**.
- It is named after the **Chinese word for "ocean" and given the "HY" designation** for short.
- The country launched its **first ocean monitoring satellite**, the HY-1A, on May 15, 2002.

**Haiyang-2D (HY-2D) satellite**

- It was developed by the **China Academy of Space Technology**, while the carrier rocket was developed by the **Shanghai Academy of Spaceflight Technology.**
- It will **form a constellation with the HY-2B and HY-2C satellites** to build an all-weather and round-the-clock dynamic ocean environment monitoring system.
- The constellation will support the **country's early warning and prediction of marine disasters**, its sustainable development and utilization of ocean resources.
- It will help in **effective response to global climate change** as well as ocean research.
- The onboard equipment enables the new satellite to provide information on the **identification of vessels, and to receive, store and transmit buoy measurement data**in China's offshore and other marine areas.
- The planned satellite network will be **capable of carrying out 80 percent of the world's sea surface wind monitoring** within six hours.
- The follow-up network of HY-2 satellites will **provide data support for marine disaster relief, meteorology, transportation and scientific applications.**

## 6.22 Mylab Coviself Self-Testing Kit

Recently, the **Indian Council of Medical Research (ICMR)** has approved the **Mylab Coviself** for home use.

**What is Mylab Coviself?**

- It is the **country's first Covid-19 self-testing kit.**
- It implies that anyone can **collect their own nasal sample** and test it for SARS-CoV-2.
- It has been developed by **MyLab Discovery Solutions**, a Pune-based molecular company.
- It uses a **rapid antigen test**, in which a nasal swab sample is tested for the virus and gives results within 15 minutes.

**Significance of self-test kits**

- The RT-PCR test, considered the gold standard for Covid-19 testing, **takes 3-4 days to give results, delaying hospitalisation and treatment.**
- The self-test kits can **potentially be a game-changer** in Covid-19 management in India.
- It can **cut queues in laboratories, reduce costs, and dissipate the burden** on existing manpower for sample collection from homes.
- It provide **quick results (within 15 minutes)**, leading to prompt treatment and isolation.
- The **easy-to-use test combines with MyLab's AI-powered mobile app** so that a user can know his/her positive status, submit the result to ICMR directly for traceability, and know what to do next in either result.

**Pros and Cons of self-test kits**

**Pros**

- A person testing himself at home rather than visiting a hospital or lab, or calling a technician at home, **reduces the risk of transmission** to others.
- Swab collection in this case is **fairly simple and quick, and reduces overall testing expenditure** and the stress of booking appointment in labs.
- Self-testing will **reduce the burden on laboratories** that are currently working 24 hours up to full capacity with manpower that is already saturated.

**Cons**

- The **reliability of results** remains a major concern.
- The **likelihood of the sample not being collected correctly**, or the swab stick getting contaminated, is high.
- The rapid antigen tests come with a **high chance of false negatives.**
    - If a Covid-infected person is asymptomatic and tests negative, the test may give a **false sense of security.**
- A person can feed a wrong address and details on the mobile app, making it **impossible for health workers to carry out contact tracing.**

## 6.23 Foul-Smelling Corpse Flower

Recently, over a thousand people queued up outside an abandoned gas station in **San Francisco's Bay Area** to catch a glimpse of the extremely rare and aptly named **'corpse flower'.**

**Corpse Flower**

- It is known for its **putrid smell**, which is often compared to that of **rotting flesh**.
- It is a flowering plant, which is **native** to the rainforests of **Sumatra in Indonesia**.
- The scientific name of the rare plant, **Amorphophallus titanum**, quite literally translates to giant, misshapen phallus
- The plant is native to Indonesia but its **saplings have been cultivated in zoos, botanical gardens and greenhouses** around the world over the years.
- In about a decade, the 'corpse flower' can **grow to be up to 10 feet tall** and unveil two of its key components:
    - A deep red skirt-like petal known as the spathe and
    - A yellow rod-like 'spadix'
- The crucial component of the plant is the **'corm'**, a fleshy underground plant stem which acts as a **storage organ where the corpse plant's energy is stored.**
- The corpse flower is known to be one of the **world's largest 'unbranched inflorescence'** or a stalk bearing a cluster of flowers.

- The plant **emits the distinct smell only when it is in bloom**, which happens once every 10 years or so and only for a brief period of time.

**What is behind the corpse flower's putrid stench?**

- The corpse flower has its **distinct smell** for a reason.
- It is also known as a **Carrion flower,** or a flower that emits a heady odour in order to attract pollinating insects in the wild such as scavenging flies and beetles.
- The main odorant which gave the **flower its distinct smell was dimethyl trisulfide**, the same compound that is emitted from cancerous wounds, microorganisms and some vegetables.
- The stench is also caused by **chemicals like dimethyl disulfide and methyl thiolacetate**, which are responsible for the garlic and cheese-like odour.
- The flowers of the plant are **pollinated by scavenging insects**, which are drawn to it due to its odour.

**Why is corpse flower so rare?**

- The plant population appears to be **dwindling in its native land of Sumatra** due to deforestation for crops and lumber.
- It was listed as an **endangered plant** in 2018 by the International Union for Conservation of Nature (IUCN).
- It is **not easy to preserve** the corpse flower outside its natural habitat.
- It requires a **very specific level of heat and humidity** to thrive.
- The lack of **genetic variety leads to inbreeding**, which means closely related plants are bred with one another.
- The seeds of the plant, known as **recalcitrant seeds**, are not easy to store either.

## 6.24 RT-PCR test kit ViraGen

Recently, the **Cipla Limited** has launched a **Covid-19 test kit** called **'ViraGen'**.

**ViraGen**

- It is a **polymerase chain reaction** (Covid-19 RT-PCR) test for Covid-19 in India.

- The commercialisation of test kit 'ViraGen' is announced by **Cipla** in partnership with **Ubio Biotechnology Systems Pvt. Ltd.**
- It is a **real-time detection kit** approved by the ICMR (Indian Council of Medical Research).
- It is based on **multiplex PCR technology.**
- It helps to **identify and detect SARS CoV-2 N Gene and ORF Lab Gene** with the sensitivity of 98.6% and the specificity of 98.8% as compared to a standard ICMR test.
- It is designed for the **qualitative detection of nucleic acid from SARS-CoV-2 in the upper and lower respiratory specimens** from individuals suspected of COVID-19.
- It is used for **qualitative detection of SARS-CoV-2** will be manufactured by Ubio Biotechnology Systems.

Raja Sir's

## 6.25 DIPCOVAN

Recently, the Defence Research & Development Organisation (DRDO) has launched the **DIPCOVAN**.

**DIPCOVAN**

- It is an **indigenously developed** antibody detection-based kit.
- It is **DIPAS-VDx COVID-19 IgG Antibody Microwell ELISA** for sero-surveillance.
- It is developed by **Defence Institute of Physiology and Allied Sciences (DIPAS)**, a laboratory of Defence Research and Development Organisation (DRDO).
- It has been developed in association with **Vanguard Diagnostics Pvt Ltd**, a development and manufacturing diagnostics company based at New Delhi.
- The kit has a **shelf life of 18 months**.

**Significance of DIPCOVAN**

- It can detect both spike as well as **nucleocapsid (S&N) proteins of SARS-CoV-2**

**virus** with a high sensitivity of 97 per cent and specificity of 99 per cent.

- It is intended for the **qualitative detection of IgG antibodies** in human serum or plasma, targeting SARS-CoV-2 related antigens.
- It offers a significantly **faster turn-around-time as it requires just 75 minutes** to conduct the test without any cross reactivity with other diseases.
- The kit will be very useful for understanding **COVID-19 epidemiology and assessing** an individual's previous SARS-CoV-2 exposure.

## 6.26 Tianwen-1: China's 1st Mars rover steps out to explore red planet

Recently, China's spacecraft **Tianwen-1** landed on Mars carrying its **first Mars rover** named **Zhurong.**

- It became the **third country** to land on Mars **after the US and Soviet Union.**
- **China's previous 'Yinghuo-1' Mars mission**, which was supported by a Russian spacecraft, **had failed** after it did not leave the earth's orbit and disintegrated over the Pacific Ocean **in 2012.**
    - The **Tianwen-1 Spacecraft** was **lifted off on a Long March 5 rocket**, from the Wenchang launch center in **July 2020.**
        - The Spacecraft consists of three parts – the **orbiter, the lander and the rover** – which separated in Mars orbit.
        - The **orbiter will remain in the orbit for scientific operations** and to relay signals while the **lander-rover combination has made an autonomous descent and landing.**
            - The **lander from Tianwen-1 has touched down on Utopia Planitia**, a large plain in the northern hemisphere of Mars.
    - **Objectives:**
        - To conduct scientific investigations into the planet's soil, geological structure, environment, atmosphere and water.
            - The mission **will be the first to place a ground-penetrating radar** on the Martian surface, which will

be able to study local geology, as well as rock, ice, and dirt distribution.**China's Other Space Programmes:**

- **Chang'e-5** (Moon)
- **Tianhe** (Permanent Space Station)

- **Other Mars Missions:**
  - **NASA's Perseverance Rover**
  - **UAE's Hope Mars Mission** (UAE's first-ever interplanetary mission)
  - **India's Mars Orbiter Mission (MOM)** or **Mangalyaan:**
    - It was launched from the Satish Dhawan Space Centre in Andhra Pradesh by **Indian Space Research Organisation**in November 2013.
    - It was launched on board a PSLV C25 rocket with the aim of studying Martian surface and mineral composition as well as scan its atmosphere for methane (an indicator of life on Mars).

**Mars**

- **Size and Distance:**
  - It is the **fourth planet from the Sun** and the **second-smallest** planet in the Solar System.
  - Mars is about **half the size of Earth.**
- **Similarity to the Earth (Orbit and Rotation):**
  - As Mars orbits the Sun, it completes **one rotation every 24.6 hours**, which is very similar to one day on **Earth (23.9 hours).**
  - Mars' axis of rotation is **tilted 25 degrees** with respect to the plane of its orbit around the Sun. This is similar to **Earth**, which has **an axial tilt of 23.4 degrees.**
  - Mars has distinct seasons like Earth, but **they last longer than seasons on Earth.**
    - **Martian days** are **called sols**—short for **'solar day'.**

- **Other Features:**
- The **reason** Mars **looks reddish** is due to oxidation or rusting of iron in the rocks, and dust of Mars. Hence it is also called the **Red Planet.**
- It has the **largest volcano** in the solar system i.e. **Olympus Mons.**
- It has **two small moons, Phobos and Deimos.**

## 6.27 Zebrafish and its Importance in Human Spaceflights

A new research in **zebrafish** has demonstrated how **induced hibernation (torpor)** may protect humans from the elements of space, especially radiation, during space flight.

- The researchers **exposed zebrafish to radiation** like what would be experienced on a six-month journey to Mars.
  - They observed signs of oxidative stress **(imbalance between antioxidants and free radicals)**, DNA damage, stress hormone signaling and changes to the cell-division cycle.
- The researchers then **induced torpor in a second group of zebrafish** which were then exposed to the same dose of radiation.
  - The results showed that **torpor lowered the metabolic rate within the zebrafish and created a radioprotective effect**, protecting against the harmful effects of radiation.
  - Torpor, **a form of hibernation**, is a brief spell of suspended animation. It usually lasts less than a day. When in torpor, an animal's metabolism, heartbeat, breathing, and body temperature are greatly reduced.

**Zebrafish**

- **Scientific Name:** *Danio rerio*
- **Habitat:**
  - It is a small (2-3 cm long) freshwater fish found in the **tropical and subtropical regions.** The fish is native to **South Asia's Indo-Gangetic plains**, where they are mostly found in the paddy fields and even in stagnant water and streams.
  - They are classified as a **species of least concern** on the **IUCN's Red List**

**of Threatened Species.**

- **Organism for Biomedical Research:**
    - They have been used to study vertebrate development, evolution, genetics, and disease due to its adequate **regeneration capacity of almost all its organs**, including the brain, heart, eye, spinal cord.
    - Zebrafish have a **similar genetic structure** (around 70%) to humans.
    - As a vertebrate, the zebrafish has the same major organs and tissues as humans. Their muscle, blood, kidney and eyes share many features with human systems.

- **Need of the Study:**
    - Recent technological advancements might have made space travel more accessible. However, long-term space travel is incredibly **detrimental to human healt**h.

- **Significance:**
    - The study could help in understanding how a form of **hibernation, known as induced torpor (a state of reduced metabolic activity)** may provide radio-protective effects.
        - Hibernation is a physiological condition found in many species.
        - It **protects them against harsh conditions**, such as food scarcity and low environmental temperatures.
    - Replicating hibernation may therefore **protect astronauts** against the **harsh conditions of space flight**, which include challenges such as **radiation exposure, bone and muscle wastage, advanced ageing and vascular problems.**
    - The **European Space Agency (ESA)** is also conducting research into the impacts of **hibernating astronauts not just for health reasons**, but because it could **reduce the amount of consumables required for a space journey** and allow the **mass of a spacecraft to be reduced by a third.**

Challenges of Space Travel

- **Radiation:**
    - Any space flight is outside **Earth's protective magnetic field**, where radiation is much higher as compared to International space stations. (International space station is just within the earth's protective atmosphere; even then radiation is 10 times higher when compared to earth.)
    - **Radiation exposure** increases **cancer risk, damages the central nervous system, can alter cognitive function, reduce motor function and prompt behavioural changes.**
- **Isolation and Confinement:**
    - **Behavioural issues** among astronauts crammed in a small space over a long period of time, are inevitable.
    - Sleep loss, circadian desynchronization, and work overload compound this issue and may lead to performance decrements, adverse health outcomes.
- **Distance from Earth:**
    - As distance of space flight increases from earth, communication delay increases. For example, there will be a communication delay of 20 minute in space travel to Mars.
- **Gravity:**
    - Different planets have **different gravitational pull**, for example astronauts would need to live and work in three-eighths of Earth's gravitational pull on Mars. Additionally, explorers will experience total weightlessness during the course of travel.
    - To further complicate the problem, when astronauts transition from one gravity field to another, it's usually quite an intense experience.
    - Blasting off from the surface of a planet or a descent through an atmosphere is many times the force of gravity.
- **Hostile/Closed Environments:**
    - NASA has learned that the **ecosystem inside the spacecraft** plays a big role in everyday astronaut life. Microbes can change characteristics in space, and microorganisms that naturally live on your body are transferred

more easily from person to person in closed habitats like the space station.

## 6.28 Delivery of oxygen through intestines

Recently, as per new research, a medical procedure can be developed by which humans with **severe respiratory illness too can be made to absorb oxygen through their intestines**.

- The method relies on **delivering oxygen to the intestines** from the anus.

**How can intestines absorb oxygen?**

- In vertebrates such as humans, meaning animals that have a spinal column, the **intestines are connected with a large number of blood vessels** that allow the absorption of digested food.
- The scientists believe that the same **blood vessels could also be able to absorb oxygen**, something which a fish called the weather loach actually does.
- Like most fish, the **loaches use their gills to take in oxygen from water** but these fishes can also bring their head above the surface to take in a gulp of air.
    - Loaches do not have lungs, and the **swallowed air travels through their intestines**, where the oxygen they need gets absorbed.
- Like loaches, **catfish and orb-weaver spiders also breathe through their gut** when the supply of oxygen in their surrounding dips.

**How can mammals be made to breathe through the intestines?**

- The research shows that like **loach fishes, mammals too can be made to absorb oxygen** from their intestines, with some external help.
- In their experiments, the authors of the paper were able to **successfully demonstrate their hypothesis on rats, mice and pigs**, by supplying oxygen to the intestines from the rectum.
- **Anaesthetized and oxygen-deprived mice had oxygen pumped up** the anus through to their intestines, a technique that helped them survive longer.
- The layers of mucous that line **mammalian rectums had to be removed** to be able to provide the oxygen direct access to the intestinal wall.

- Instead of pumping in gas, the **scientists have used perfluorocarbons** i.e. liquids that can absorb large amounts of oxygen.
- Anaesthetized mice with their linings intact were **now administered perfluorocarbons enemas** and placed in oxygen-deprived surroundings.
    - These mice were able to **retain high levels of oxygen in their blood four times longer** compared with animals that did not receive such a treatment.

## 6.29 Black Fungus v/s White Fungus

Amid the second wave of COVID-19 in India, a **sudden rise in Black Fungus cases** have been reported from several parts of the country.

- Recently, the **cases of White Fungus were reported** from Patna, Bihar, which was considered more dangerous than Black Fungus.

**White Fungus**

- It is a **fungal infection** where there is formation of **whitish membranes or discharge** caused by **candida group of organisms**.
- It is a f**ungal infection called candidiasis**.
- It can be caused by the **unsterile use of oxygen cylinders** or **the overuse of steroids.**
- It attacks body parts such as **lungs, skin, nail, brain, kidney, mouth** etc.
- The symptoms are **whitish patches in the oral cavity, white discharge, skin lesions and symptoms of pneumonia** of cough, chest pain and low oxygen level.

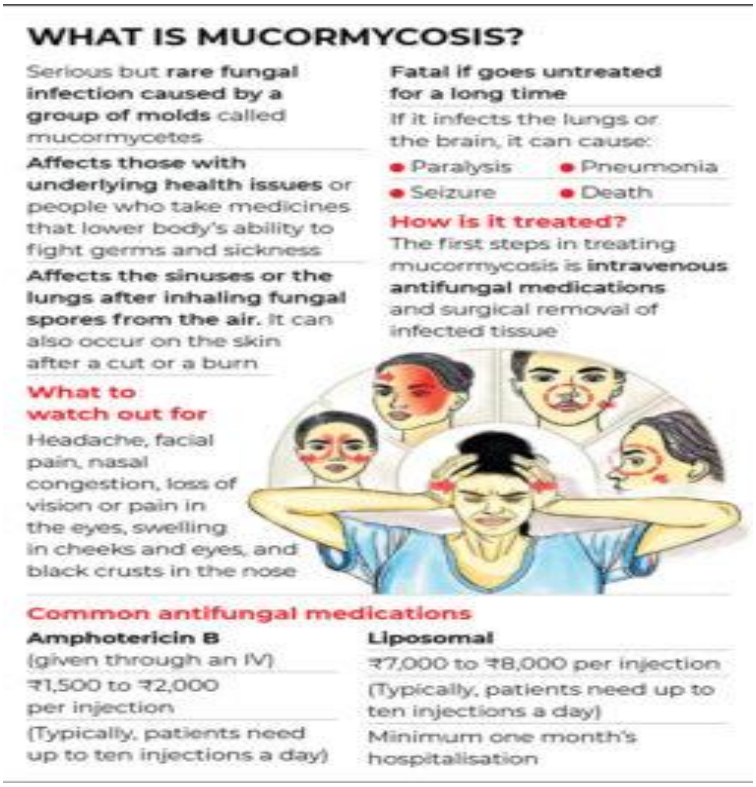
**Treatment of White Fungus**

- The **Anti-fungal drugs** can be used to treat patients infected with White Fungus.
- Candidiasis can be treated with **fluconazole or itraconazole orally.**
- The tropical applications will be required for infections in the **oral cavity or genitourinary regions.**
- It can be **prevented by proper sanitisation of ventilators/oxygen cylinders** and also, by taking accurate care of the medical types of equipment that are used on the

patients.

**Who is more likely to be affected by white fungus?**

- It is more likely to **infect people with low immunity**.
- It can also be caused if **people come in contact with water or unsanitary environment** containing the moulds.
- The **disease isn't contagious** but a person is said to be vulnerable to the infection since these moulds can be easily inhaled by a patient.
- The fungus can further **spread to vital organs** and cause complications.
- The people with **low immunity, commorbidities, diabetes, cancer** or those using steroids regularly are at a higher risk of getting infected with the white fungus.


WHAT IS MUCORMYCOSIS?
Serious but rare fungal infection caused by a group of molds called mucormycetes
Affects those with underlying health issues or people who take medicines that lower body's ability to fight germs and sickness
Affects the sinuses or the lungs after inhaling fungal spores from the air. It can also occur on the skin after a cut or a burn
What to watch out for
Headache, facial pain, nasal congestion, loss of vision or pain in the eyes, swelling in cheeks and eyes, and black crusts in the nose
Fatal if goes untreated for a long time
If it infects the lungs or the brain, it can cause:
Paralysis
Pneumonia
Seizure
Death
How is it treated?
The first steps in treating mucormycosis is intravenous antifungal medications and surgical removal of infected tissue
Common antifungal medications
Amphotericin B
(given through an IV)
₹1,500 to ₹2,000 per injection
(Typically, patients need up to ten injections a day)
Liposomal
₹7,000 to ₹8,000 per injection
(Typically, patients need up to ten injections a day)
Minimum one month's hospitalisation

**Black Fungus**

- It is a **rare but serious fungal infection** known as **mucormycosis**.
- It is caused by a **group of moulds known as mucormycetes** present naturally in the environment.

- It mainly affects people who are on **medication for health problems** that reduces their ability to fight environmental pathogens.
- The **sinuses or lungs of such individuals** get affected after they inhale fungal spores from the air.

**Treatment of Black Fungus disease**

- It is treated with **antifungals and mucormycosis** may eventually require surgery.
- The doctors have said that it is of **utmost importance to control diabetes, reduce steroid use, and discontinue immunomodulating drugs**.
- The treatment includes **infusion of normal saline (IV) before infusion of amphotericin B** and **antifungal therapy,** for at least 4-6 weeks.

**Who is more prone to black fungus?**

- The **diabetic patients, COVID patients and people who are on steroids** are at a higher risk of contracting the black fungal infection.
- The major risk factors for this disease include **uncontrolled diabetes mellitus, immunosuppression by steroids, prolonged ICU stay, malignancy and voriconazole therapy.**

IAS ACADEMY

## 6.30 Colored Dissolved Organic Matter (CDOM)

Recently, the Ministry of Science & Technology has said that the reduced the anthropogenic activities during COVID-19 imposed lockdown period indicated by decreased **Colored Dissolved Organic Matter (CDOM)** build-up and nutrients in the Mandovi Estuary.

**Dissolved Organic Matter (DOM)**

- The dissolved organic matter is the **largest reservoir of organic carbon** in the aquatic environment.
- It can be **greatly influenced by land use**, which can ramp up or diminish organic matter loads to waterways.
- The **forested lands can contribute more DOM than agricultural lands**, but the nutrients bound in the material can be less bio-available than those from farm fields.
- The organic matter in waterways can be viewed as a **mixture of things living and**

**dead**, including plant, microbial and animal products at various stages of decomposition.

**Colored Dissolved Organic Matter (CDOM)**

- CDOM is interchangeably known as **chromophoric dissolved organic matter** or **colored dissolved organic matter.**
- The CDOM cover the parameter that can be **measured in aquatic environments** as a product of decaying material.
- CDOM is **largely a subset of DOM**, or dissolved organic matter.
- The decay releases organic substances, also called **tannins that stain waters** and can have effects on light absorption and other aspects of water quality.
- CDOM is closely **related to fDOM or fluorescent dissolved organic matter**, as fDOM refers to the fraction of CDOM that fluoresces.
- CDOM contributes to **light absorption and may also help fuel bacterial respiration** because of the large quantities of carbon, nitrogen and phosphorus that it carries.

**Why CDOM is measured?**

- It is measured because of its value as an **indicator of all the constituents** floating around water bodies, regardless of their size or location.
- The CDOM can have **effects on all aquatic life** in a water body.
- It reduces **transparency, traps heat, binds with metals and fuels respiration.**
- It impacts on **levels of dissolved oxygen** in a water body.
- Large loads of organic matter can greatly increase oxygen demands in rivers and lakes by spurring **enhanced microbial consumption of dissolved oxygen.**

## 6.31 National Initiative for Developing and Harnessing Innovations (NIDHI)

Recently, the Ministry of Health and Family Welfare has unveiled **'Cool' PPE Kits for Corona Warriors** developed under **National Initiative for Developing and Harnessing Innovations (NIDHI).**

## 'Cool' PPE Kits for Corona Warriors

- It is named as **Cov-Tech** developed by a **student innovator Nihaal Singh Adarsh** from Mumbai.
- It is a **compact and frugal innovation** which is a ventilation system for PPE kits.
- It takes the **surrounding air, filters it and pushes it** into the PPE suit.
- The design of the **ventilation system** ensures a complete air seal from the PPE kit.
- It provides a **breeze of fresh air** to the user in a gap of just 100 seconds.
- The **Cov-Tech Ventilation System** became a reality, thanks to a Rs. 10 lakh grant for prototype development and product innovation.
- The innovator received the funding from **NIDHI's PRomoting and Accelerating Young and ASpiring technology entrepreneurs (PRAYAS)**.

## NIDHI

- It is an **umbrella program** pioneered by the **Department of Science & Technology (DST)**.
- It is aimed at nurturing ideas and innovations **(knowledge-based and technology-driven)** into successful startups.
- The **objectives** of NIDHI are:
    - To take forward student innovations in IEDC / NewGen IEDC programme to commercialization stage;
    - To promote student startups; and
    - To accelerate the journey of idea to prototype by providing initial funding assistance
- The **key components** of NIDHI are:
    - **NIDHI-GCC** – Grand Challenges and Competitions for scouting innovations
    - **NIDHI-PRomotion and Acceleration of Young and Aspiring technology entrepreneurs (NIDHI-PRAYAS)** – Support from Idea to Prototype
    - **NIDHI – Entrepreneur in Residence (NIDHI-EIR) –** Support system to

reduce risk

- **NIDHI-Technology Business Incubator (TBI)** – Converting Innovations to start-ups
- **NIDHI-Accelerator** – Fast tracking a start-up through focused intervention
- **NIDHI-Seed Support System (NIDHI-SSS)** – Providing early stage investment
- **NIDHI Centres of Excellence (NIDHI-CoE)** – A World class facility to help startups go global

**NIDHI-PRAYAS**

- It is a **pre-incubation initiative** that would be implemented through a **Program Management Unit (PMU).**
- The incubators selected for implementing the PRAYAS programme will be the **PRAYAS Centres (PCs).**
- It is specifically launched to support young innovators turn their ideas into **prototype/ proof of concept (PoC).**
- It allows the **innovators to try their ideas without fear of failure**, hence allowing them to reach a stage where they have a ready product and are willing to approach incubators for commercialization.
- The **objectives** of PRAYAS Prototyping Grant:
    - Enable translation of an innovative idea to a prototype;
    - Provide a platform for faster experimentation and modify approaches in the idea to market journey;
    - Generate innovative solutions relevant to the local and global problems;
    - Attract a large number of youth who demonstrates problem solving zeal and abilities; and
    - A pre-incubation program or pipeline activity leading to startup incubation

## 6.32 Total Lunar Eclipse and Supermoon

Recently, a **super-celestial event** took place as the **first lunar eclipse of 2021** took place.

- The event was more special as it coincided with a **supermoon, a total lunar eclipse** and **a red blood moon** all at once.

**Supermoon**

- NASA notes that a supermoon occurs when the **Moon's orbit is closest to the Earth** at the same time that the **Moon is full.**
- As the Moon orbits the Earth, there is a point of time when the **distance between the two is the least (called the perigee)** and a point of time when the **distance is the most (called the apogee).**
    - When a full Moon appears at the point when the **distance between the Earth and the Moon is the least**, not only does it appear to be brighter but it is also larger than a regular full moon.
- According to NASA, the term supermoon was coined by astrologer **Richard Nolle in 1979**.
    - In a typical year, there may be **two to four full supermoons** and **two to four new supermoons** in a row.

**Lunar Eclipse**

- It is a phenomenon which occurs when the **Moon and Sun are on opposite sides of the Earth.**
- The phenomenon occurs during the **full moon.**
- A full moon happens when the **Moon and the Sun are on opposite sides of the Earth** which allows the person to see the **entire lit-up side**, which looks like a round disc in the night sky.
- The moon will also appear to be red because of the **total lunar eclipse.**

**Why does the moon look red?**

- It is because the Earth will **block some of the light from the Sun from reaching the moon** and as the Earth's atmosphere filters the light, it will soften **"the edge of**

**our planet's shadow" "giving the Moon a deep, rosy glow**".

- Sunlight has all colors and while passing through the atmosphere of the Earth, the **blue light is filtered while the red part passes** through it.
    - It is because of this the **sky looks blue** and **redness prevails at sunrise and sunset.**
- In the case of a lunar eclipse, the **red light passes through the earth's atmosphere** and it turns towards the moon while the blue light remains out of it which makes the moon look completely red.

## 6.33 Sun Halo/Kaleidoscope Effect

Recently, the **people of Bangalore witnessed a bright rainbow ring around the sun** for a few moments – a rare optical and atmospheric phenomenon called **"22 degree circular Halo".**

- The phenomenon **popularly known as the 22 degree circular halo of the sun or occasionally the Moon** (also called a moon ring or winter halo), **occurs when the sun's or moon's rays get deflected/refracted through the hexagonal ice crystals** present **in cirrus clouds.**
    - This is **also called the Kaleidoscopic Effect.**
- These halos **are called 22-degree halos,** as the halo or ring has an **apparent radius of 22 degrees** around the sun/moon.
- **Circular halos specifically are produced by cirrus clouds,** which are thin, detached, hair-like clouds. These clouds are formed very high up in the atmosphere, at a height of over 20,000 feet.
- Just like a rainbow, a halo is visible when viewed from the right angle — sometimes appearing just white but often with colours of the spectrum also clearly present.
    - The halo is the **brightest at the inner edge** of the circular disk, with no light inside the disk as no light is refracted at smaller angles.
    - **Red** light is **refracted less** than other colours of light, so the halo's **inner edge** is **reddish.** Other **shades** typically tend to**overlap and wash out.**

## 6.34 Yellow Fungus Disease

Amid the rising cases of black fungus infection across India, the **first case of yellow fungus**, which is considered dangerous than black fungus and white fungus, has been reported from **Ghaziabad in Uttar Pradesh.**

- Like black fungus and white fungus, **yellow fungus too is a fungal infection**, but it can be rather fatal and deadly as it begins internally.
- It is mainly caused by **bad hygiene.**
- The delay in its diagnosis makes it very **difficult to manage and more dangerous** as early diagnosis is a necessity in such cases.
- It may not start from the lungs but it **invades internal organs of the body** and affects the entire functioning.

**Symptoms of Yellow Fungus**

- The symptoms of yellow fungus are **loss of appetite, lethargy and weight loss.**
- In latter stages of the infection patients suffering from yellow fungus exhibit severe symptoms **sunken eyes due to malnutrition and organ failure, slow healing of wounds** and **oozing of pus from the wounds, and necrosis.**

**Treatment of Yellow Fungus**

- The treatment for yellow fungus is similar to mucormycosis i.e**. Amphotericin-B injection.**

## 6.35 Saline Gargle RT-PCR Testing Method

Recently, the Indian Council of Medical Research (ICMR) approves **'Saline-Gargle' RT-PCR Test**.

**Saline Gargle RT-PCR Test**

- It is a **do-it-yourself version of the RT-PCR test** developed by the Council of Scientific and Industrial Research (CSIR).
- It is an **innovative, patient friendly method** developed by CSIR's **National**

**Environmental Engineering Research Institute (NEERI).**

- It is a **swab-free, non-invasive testing mechanism** for testing COVID-19.

**Working of Saline Gargle RT-PCR Test**

- The saline gargle RT-PCR method uses a **simple collection tube** filled with **saline solution.**
- The **patient gargles the solution** and rinses it inside the tube.
- This sample in the **collection tube is taken to the laboratory** where it is kept at room temperature, in a special buffer solution prepared by NEERI.
- An **RNA template is produced when this solution is heated**, which is further processed for Reverse Transcription Polymerase Chain Reaction (RT-PCR).

**Significance of Saline Gargle RT-PCR Test**

- The adoption of gargle for sample collection will **translate to substantial cost savings**as it would cut down the need for swabs and personal protective equipment (PPE).
- It will **reduce the need** to develop and maintain special infrastructure for swab collection.
- It offers a **bunch of attractive benefits** such as it is simple, fast, cost-effective, patient-friendly and comfortable.
- It offers **instant results and is well-suited for rural and tribal areas**, given the minimal infrastructure requirements.

## 6.36 DRDO develops near-isothermal forging technology for aero-engines

The **Defence Research and Development Organisation** (DRDO) has announced step towards developing a jet engine with the thrust to power a fighter in combat.

Major Highlights:

- DRDO established the **near-isothermal forging technology** to produce all the five stages of high-pressure compressor (HPC) discs out of difficult-to-deform, titanium alloy, using its unique 2000 MT (metric tonne) isothermal forge press.
    - An **isothermal process** is a thermodynamic process in which

the **temperature of a system remains constant.**

- This technological breakthrough involves developing **complex titanium** and **nickel-based alloys** that can withstand temperatures of more than 1,000 degrees Celsius.
- With this development, India has joined the **league of limited global engine developers** to have the manufacturing capabilities of such critical aero-engine components.

Rocket Propulsion:

- A **fighter jet engine functions** by sucking in a large volume of air, compressing it rapidly in several stages, injecting aviation fuel into the air and then setting it alight to create a high-pressure, high-temperature gaseous mix.
- That is expelled backward through the exhaust, its reaction **propelling the aircraft forward**.
- To achieve this, **jet engines have seven modules**, which from front to rear are: the input fan, low pressure and high-pressure compressors, the combustion chamber, high pressure and low-pressure turbines and the exhaust.

## SOCIAL ISSUES AND DEVELOPMENT

### 7.1 Model Insurance Village

Recently, the **Insurance Regulatory & Development Authority of India (IRDAI)** has come out with the **concept of model insurance villages.**

**Need for Model Insurance Village**

- India is **predominantly rural with more than 65%** of the population residing in rural areas.
- Most rural people are **hardly aware of insurance as a concept** nor have they experienced the benefits of insurance.
- In rural areas, agriculture and allied activities are the **main occupations and the prime source of livelihood.**
- The **target segment of rural insurance consists largely of low-income households** or individuals who have little savings and limited financial capacity.

**Model Insurance Village**

- The concept is to **offer comprehensive insurance protection to all the major insurable risks** that villagers are exposed to.
- The idea behind the model village concept is to **make available covers at affordable or subsidised cost**.
- The concept may be **implemented in a minimum of 500 villages in different districts**of the country in the first year and increased to 1,000 villages in the subsequent two years.
- The choice of villages is to be made carefully, **considering the various relevant aspects and parameters** in order to implement the concept successfully for a period of three to five years.
- The efforts in **selected villages need to be continued for a minimum of 3 to 5 years** so as to make insurance benefits visible to the community.

**Significance of Model Insurance Village**

- It aims to demonstrate the **concept and efficacy of insurance as risk management tool**and to make farmers and rural population aware of benefits of insurance.
- The **special focused efforts need to be made to cover the entire population** in the village and their property.
- The coverage will include **farms/crops, farm machineries, vehicles, different village level services, manufacturing enterprises** and other specific insurance needs of the particular village through targeted efforts.
- The model villages are expected to **tackle losses due to natural calamities like floods and earthquakes** as there is no catastrophe insurance in the country now.

**Challenges in spreading insurance to rural areas**

- **Lack of awareness** about the concept of insurance and its benefits among the rural population;
- **Limited choice of insurance products** with various flexible features;
- **Absence of people-friendly and transparent claim** settlement mechanisms;
- **Weak network of insurance companies** and intermediary presence in rural areas;

- **Low/slow pace of modern technology adoption** in the rural insurance segment;
- **Underdeveloped market with constraints** in offering affordable covers and proper servicing; and
- **Lack of industry-wide well-coordinated efforts** to serve the rural insurance segment

**How challenges can be addressed?**

- **Awareness and publicity:** The draft proposal says a focused publicity campaign needs to be carried out for a reasonable period of time showcasing the benefits of insurance, rural insurance products and its features, among other things.
    - The campaign in vernacular should be done through print, electronic, social media and through other traditional and innovative ways of reaching out to people.
- **Insurance product innovation and other enabling steps:** The innovative, affordable, technology-based insurance products provide a flexible choice of risk protection offering adequate risk coverage in rural and semi-urban areas.

## 7.2 Manufacturing Job Loss in India

Recently, the researchers at Azim Premji University have released the **State of Working India (SWI) 2021**.

**Key Highlights**

- A report brought out jointly by the **Centre for Monitoring Indian Economy (CMIE)** and **Centre for Economic Data and Analysis (CEDA)**.
- It pointed to an **ailment of the Indian economy** that has not only been a longstanding one but also one that has gotten worse over the past few years even without the help of Covid.
- The CMIE-CEDA report looked at the **employment in India and its distribution across** different sectors such as **agriculture, industry and services.**
- The number of people **employed in the manufacturing sector** of the economy has **come down from 51 million to 27 million** i.e. almost halving in the space of

just four years.

**Why are these trends worrisome?**

- It is important to understand that **traditionally Indian policymakers have been of the view** that the manufacturing sector is our best hope to soak up the surplus labour.
- Manufacturing is well suited because it can **make use of the millions of poorly educated Indian youth**, unlike the services sector, which often requires better education and skill levels.
- The most of the **manufacturing jobs lost are in labour-intensive sectors** such as textiles, construction material (like tiles etc.) and the food processing industry.
    - The jobs in textiles manufacturing have **come down from 12.6 million in 2016-17 to just 5.5 million in 2020-21.**
    - The employment in construction material firms has **shrunk from 11.4 million to just 4.8 million.**

**Why is Indian manufacturing failing to create jobs?**

- The commencement of a manufacturing unit requires the **highest amount of fixed investment upfront.**
- It implies that it is a **big commitment on the part of an entrepreneur** to put up a huge amount of money without necessarily knowing how it will all pan out.
- The combination of **corrupt government and bribe by officials and politicians** makes starting a manufacturing firm that much riskier and that explains the slow growth.
- The Indians have always **consumed relatively less of manufacturing goods** and relatively more of food and services.
- India **did not push for integrating its labour-intensive manufacturing** in the global supply chains by aggressively following exports.

**Challenges faced by manufacturing sector**

- **Skilled manpower is in short supply:** The quality of training provided by Indian vocational trade schools lack the necessary equipment and infrastructure to impart relevant training.

- **Supply chains are largely inefficient:** An array of external factors affect supply chain networks, including market volatility and skewed demand patterns, infrastructure and transportation bottlenecks, and poor structuring of supply chain networks to optimize on sales and excise taxes.
- **Suppliers fail to provide high-quality products:** The tier 1 or tier 2 suppliers tend to be small or medium-size enterprises with limited engineering or process capabilities.

**Steps to be taken to improve manufacturing sector**

- **Make smart investments in asset productivity:** The manufacturers can drive incremental innovation and leverage know-how of vendors and industry groups to keep their manufacturing practices up to date.
- **Develop employee skills across all levels:** The industry can establish and support vocational training institutes for developing skilled labor pools around key manufacturing clusters.
- **Increase agility to reduce waste across the supply chain:** The supply chain agility is crucial to a lean organization as agile companies carry fewer inventories, manage flow better, and have fewer stock-outs.

## 7.3 Analysis of the loss of life associated with working long hours

Recently, the **World Health Organization (WHO)** and the **International Labour Organization (ILO)** have released the estimates on large number of loss of life is associated with long working hours.

- The **number of people working long hours is increasing** and this trend puts even more people at risk of work-related disability and early death.
- It is the **first global analysis** of the loss of life and health associated with working long hours jointly prepared by WHO and ILO.
- **Disease and Long Working Hours**
    - It estimated that in 2016, **3.98 lakh people died from stroke and 3.47 lakh from heart disease** as a result of having worked at least 55 hours a week.
    - It highlights that between 2000 and 2016, the **number of deaths from**

**heart diseasedue to working long hours increased** by 42%, and from stroke by 19%.

- The study concludes that working 55 or more hours per week is associated with an estimated **35% higher risk of a stroke and a 17% higher risk of dying from ischemic heart disease**, compared to working 35-40 hours a week.

- **Impact of Long Working Hours on Gender**
  - It highlighted that the **work-related disease burden is particularly significant in men**(72% of deaths occurred among males), people living in the Western Pacific and South-East Asia regions, and middle-aged or older workers.
  - Most of the deaths recorded were among **people dying aged 60-79 years**, who had worked for 55 hours or more per week between the ages of 45 and 74 years.

- The working long hours is now known to be **responsible for about one-third of the total estimated work-related burden of disease.**

**Recommendations to protect workers**

- The governments can **introduce, implement and enforce laws, regulations and policies** that ban mandatory overtime and ensure maximum limits on working time;
- The **bipartite or collective bargaining agreements** between employers and workers' associations can arrange working time to be more flexible, while at the same time agreeing on a maximum number of working hours;
- The **employees could share working hours** to ensure that numbers of hours worked do not climb above 55 or more per week.

## 7.4 Cardiovascular Diseases among Women on the rise in India

Recently, the **'Lancet women and cardiovascular disease Commission: reducing the global burden by 2030'** report was published in The Lancet which provides insights to **cardiovascular diseases among women**.

- It is an **all-female-led commission report** which was published in The Lancet.
- It was presented during a **plenary session at the American College of**

**Cardiology's**70th annual scientific session recently.

- The Commission aims to help reduce the **global burden of cardiovascular conditions**that account for **35 per cent of deaths** in women worldwide by 2030.
- In 2019, there were approximately **275 million women around the world with CVD**, with a global age-standardised prevalence estimated at 6402 cases per 1 lakh.
- The leading cause of death from CVD worldwide in 2019 was **ischemic heart disease (47 per cent of CVD deaths)**, **followed by stroke (36 per cent of CVD deaths).**
- The report highlighted that globally the **prevalence of CVD among women has been declining**, with an overall decrease of 4.3 per cent since 1990.
- The world's most populous nations have seen an **increase in CVD, including China (10% increase), Indonesia (7%), and India (3%).**

**Causes for increase in cardiovascular diseases**

- The **lengthening of life expectancy** has resulted in a longer period of exposure to risk factors.
- The levels of the risk too **rise due to urbanisation, industrialisation and globalisation** propelling changes in behaviours.
- The **unhealthy diets and reduced physical activity** have become common scenarios among the people.
- The health systems are also **less efficient in detecting and controlling risk factors** like hypertension and diabetes in women.
- The health seeking behaviours of women are **impeded by patriarchal family norms**which results in delaying of treatment for cardiovascular risk factors and disease.

**Recommendations under the report**

- The researchers have called for **urgent action** to:
    - Improve care and prevention;
    - Fill knowledge gaps; and
    - Increase awareness to tackle worldwide leading causes of death among

women.

- The report recommended a need for initiatives to **expand prevention, diagnosis, and treatment of CVD** in women who live in highly populated and industrialised regions.
- It is necessary to address the determinants of **risk through health promotion and disease prevention** while increasing the responsiveness and efficiency of health systems to provide timely diagnosis and treatment.

**Cardiovascular diseases**

- The (CVDs) are a **group of disorders** of the **heart and blood vessels.**
- The CVDs include:
    - **Coronary heart disease:** disease of the blood vessels supplying the heart muscle;
    - **Cerebrovascular disease:** disease of the blood vessels supplying the brain;
    - **Peripheral arterial disease:** disease of blood vessels supplying the arms and legs;
    - **Rheumatic heart disease:** damage to the heart muscle and heart valves from rheumatic fever, caused by streptococcal bacteria;
    - **Congenital heart disease:** malformations of heart structure existing at birth;
    - **Deep vein thrombosis and pulmonary embolism:** blood clots in the leg veins, which can dislodge and move to the heart and lungs.
- The heart attacks and strokes are **usually acute events and are mainly caused by a blockage** that prevents blood from flowing to the heart or brain.

## 7.5 Project Madad to combat COVID-19

Recently, the diaspora doctors and professionals have launched **'Project Madad'** to combat COVID-19.

**Project Madad**

- It is an initiative of a **voluntary group of doctors and professionals** from the diaspora in the US and from India.
- It is a **unique initiative** that will provide:
    - **Virtual time-sensitive information** to healthcare workers in rural areas on treating COVID-19 patients; and
    - **Real-time details** on hospital bed availability and counter vaccine misinformation
- It has been created with a mission that **"proper education and training"** of local healthcare workers and **Registered Medical Practitioners (RMPs)** will be "fundamental" in controlling COVID-19 spread in rural India.
- The Madad team is **initially working with RMPs** in rural Telangana and Andhra Pradesh.
- It will be scaled in other areas and assist healthcare workers to **recognise COVID-19 symptoms, treat mild cases at homes** and provide advice on vaccination.
- It is focused on **educating and training RMPs, sharing information in local languages** and procuring access to vaccines.

IAS ACADEMY

## 7.6 Rights of Van Gujjars

The **Uttarakhand High Court** has **reprimanded the State government for stopping some Van Gujjar** families on the way **to Govind Pashu Vihar National Park** and said their **right to life is being violated** by the authorities.

- The **Van Gujjars pursue seasonal migration from the Terai-Bhabar and Siwalik region of Uttarakhand to the higher bugyals in the Western Himalayas in summer** and vice versa in winter.
    - This **phenomenon of transhumance** pursued by the community is among the few climate-adaptive and resilience strategies that ensures their pastoral livelihood remains viable and sustainable.
- The Van Gujjars **possess legitimate permits** across their summer (Govind Pashu Vihar National Park) and winter homesteads. However,

they are **not permitted by authorities** to enter the Park.

- **Rights of Pastoralists under Forests Rights Act 2006**
    - It has ensured that **even pastoralists possess rights to access grazing pastures in lieu of the Community Forest Resource right** they are eligible for.
        - Section 2 (a) **prescribes for the rights of pastoral communities on customary common forest land** within the traditional or customary boundaries of a village.
    - It **also prescribes the seasonal use of a landscape in case of pastoral communities**, including in unclassed forests, reserve forests, un-demarcated forests, deemed forests, protected forests, sanctuaries and national parks.

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- Upholds the **right of Van Gujjars to migrate to their summer homesteads** in the **bugyals (Himalayan alpine meadows)**located within the **Govind Pashu Vihar National Park.**
- The court relied on **Article 21 (Protection of Life and Personal Liberty) of the constitution.**

**Article 21 of the Constitution**

- It declares that **no person shall be deprived of his life or personal liberty except** according to **procedure established by law.**
- This right is **available to both citizens and non-citizens.**
- The right to life is **not merely confined to animal existence or survival** but also includes the right to live with human dignity and all **those aspects of life** which go to make a man's life **meaningful, complete and worth living.**

**Van Gujjars**

- Van Gujjars are the **forest-dwelling nomadic community** inhabiting the **foothills of Himalayan States such as Uttarakhand, Himachal Pradesh and Jammu and Kashmir.**
- Usually, they **migrate to the bugyals (grasslands)** located in the upper Himalayas with their buffaloes and return only at the end of monsoons to their makeshift huts,

deras, in the foothills.

- They traditionally **practice buffalo husbandry**; a family owns up to 25 heads of buffaloes. They rely on buffaloes for milk, which gets them a good price in Uttarakhand and Uttar Pradesh markets.

**Govind Pashu Vihar National Park**

- It is located in the **Uttarkashi district** of the state of **Uttarakhand.** The park lies in the higher reaches of the **Garhwal Himalayas.**
- The park was **established as a Wildlife Sanctuary in the year of 1955.** It was **declared as a National Park in the year of 1990.**
- Fauna include the **Snow Leopard**, Brown Bear, Musk Deer, Western Tragopan etc.
- Some of the noteworthy trees present in the sanctuary include deodar cedar, chir pine, silver fir, blue pine and several **deciduous species.**
- Within the park is the **Har-ki-dun valley** which is a known **spot for trekking**, while the **Ruinsara high altitude lake** is also popular as a tourist destination.
- The park creates an upper water catchment of **River Tons.**
- **Tons river** is a significant tributary of **Yamuna River** and reaches the upper **stretches of Garhwal.**

**Other Protected Areas in Uttarakhand**

- Jim Corbett National Park (first National Park of India).
- Valley of Flowers National Park and Nanda Devi National Park which together are a **UNESCO World Heritage Site.**
- **Rajaji National Park.**
- **Gangotri National Park.**
- Nandhaur Wildlife Sanctuary.

## ENVIRONMENT

### 8.1 Shift in Earth's axis due to Climate Change

Recently, a study published in **Geophysical Research Letters of the American Geophysical**

**Union (AGU)** has stated that the **planet's axis of rotation has been moving**more than usual due to **climate change.**

**Process of shifting of Earth's axis**

- The Earth's axis of rotation is the line along which it **spins around itself as it revolves around the Sun.**
- The points on which the **axis intersects the planet's surface** are the **geographical north and south poles.**
- The **location of the poles is not fixed** because the axis moves due to changes in how the Earth's mass is distributed around the planet.
    - The poles move when the axis moves, and the movement is called **"polar motion"**.
- According to NASA, data from the 20th century shows that the **spin axis drifted about 10 centimetres per year.**
- The polar motion is caused by **changes in the hydrosphere, atmosphere, oceans, or solid Earth** but now, **climate change is adding to the degree** with which the poles wander.

**Highlights**

- The climate change has caused **billions of tonnes of glacial ice to melt into oceans** which has caused the Earth's poles to move in new directions.
- As per the study, the **North Pole has shifted in a new eastward direction** since the 1990s, because of changes in the hydrosphere.
- The **average speed of drift was 17 times faster** from 1995 to 2020 as compared to 1981 to 1995.
- The calculations were based on satellite data from **NASA's Gravity Recovery and Climate Experiment (GRACE) mission** as well as estimates of glacier loss and groundwater pumping.
- The **faster ice melting under global warming** was the most likely cause of the directional change of the polar drift in the 1990s.
    - The other possible causes are **(terrestrial water storage) change in non-glacial regions** due to climate change and unsustainable

consumption of groundwater for irrigation and other anthropogenic activities.

**Gravity Recovery and Climate Experiment (GRACE) mission**

- It was selected as the **second mission under the NASA Earth System Science Pathfinder (ESSP) Program** in May 1997.
- It was **launched in 2002.**
- It is a joint partnership between the **National Aeronautics and Space Administration (NASA) in the United States** and **Deutsche Forschungsanstalt für Luft und Raumfahrt (DLR) in Germany.**

**Functions of GRACE Mission**

- It was aimed at **accurately mapping variations in the Earth's gravity field** over its 5-year lifetime.
- Its objective was to **map the Earth's gravity fields by making accurate measurements**of the distance between the two satellites, using GPS and a microwave ranging system.
- The **gravity variations** that GRACE were:
    - changes due to surface and deep currents in the ocean;
    - runoff and ground water storage on land masses;
    - exchanges between ice sheets or glaciers and the oceans; and
    - variations of mass within the Earth.

## 8.2 State Disaster Response Fund (SDRF)

Recently, the **Department of Expenditure** on the recommendation of Ministry of Home Affairs has released the **1st instalment of the Central Share** of the **State Disaster Response Fund (SDRF)** for the year 2021-22 to all the States.

- An amount of **Rs.8873.6 crore** has been released to the States.

**State Disaster Response Fund (SDRF)**

- It is constituted under the **section 48 of (1) (a) of Disaster Management Act 2005.**
- It is a **primary fund available with State Government** for responses to notified disaster.
- The **Central Government** contributes 75% of SDRF allocation for **general category States/UTs** and **90% for special category States**.
- The annual contribution is released in **two equal instalments** as per the recommendation of the **finance commission.**
- The **State Government may use up to 10% of the funds available under SDRF** for providing immediate relief to the victims of the natural disaster that day considered to be "Disaster" within the local contacts in the State.

**Coverage of State Disaster Response Fund (SDRF)**

- SDRF shall be **used only for meeting the expenditure** for providing immediate relief to the victims.
- The disasters covered under SDRF are **Cyclone, Drought, Earthquake, Floods, Tsunami, Hailstorm, Landslide, Avalanche, Cloud burst, Pest attack, Frost** and **Cold wave**.

**Features of State Disaster Response Fund (SDRF)**

- It is constituted in the **Public Account under the Reserve Fund.**
- The state government shall **pay the interest to the SDRF at the rate applicable** to overdraft regulation guidelines of the RBI.
- The **nodal ministry** for overseeing and monitoring the operations under SDRF is **Ministry of Home Affairs.**
- The audit the SDRF is carried out by **Comptroller and Auditor General of India (CAG)** on annual basis.
- The **share of the Government of India** to the SDRF shall be paid as **grant-in-aid.**

## 8.3 Biodegradable Yoga Mat to tackle Water Hyacinth Menace

Recently, a **biodegradable and compostable yoga mat** developed from **water hyacinth**by six young girls from the fishing community in Assam could turn this **water plant from a**

**nuisance to wealth.**

**Biodegradable Yoga Mat**

- The mat called **'Moorhen Yoga Mat'** will soon be introduced to the world market as a unique product.
- The innovation by the girls could **contribute significantly towards the environmental conservation and sustainability of Deepor Beel** and also ensure local livelihood.
- The intervention was triggered through an initiative by **North East Centre for Technology Application and Reach (NECTAR).**
    - It involve the **entire women community associated with a collective called 'Simang'** meaning dream, led by the 6 girls to create wealth from water hyacinth plants.
- The mat is a **hand-woven, 100% biodegradable and 100 % compostable mat** to be used for doing Yoga was ideated as a means to provide multiple ecological and social benefits.
- The mat developed through **fiber processing and technological interventions** could improve the aquatic ecosystem of the wetland through removal of water hyacinth.
- The **'Moorhen Yoga mat'** named after **Kam Sorai (Purple moorhen, a resident bird of Deepor Beel Wildlife sanctuary)**.

**Water Hyacinth**

- **Water hyacinth (Eichhornia crassipes)** is a large **aquatic plant native** to the **Amazon basin.**
- Its **thick, waxy, oval-shaped leaves are 4-8 inches across** and branch out from the center of the plant on modified stems that may rise as much as 1 meter above the water surface.
- Water hyacinth **produces thousands of seeds each year**, which can remain viable for up to 30 years.
- Water hyacinth is able to **grow in a wide variety of water bodies from lakes, streams, ponds, waterways, ditches, and backwater areas**, although it prefers,

and grows most prolifically, in nutrient-enriched waters.

**Purple Moorhen**

- The purple moorhen or purple swamphen (Porphyrio Porphiriyo) is an **aquatic bird found in marshy lands and swamps** throughout the country.
- **In Assam**, it is popularly known as **'Kaamsorai'.**
- Moorhen known to be a **shy bird**, immediately hides in bushes even at the slightest disturbance.

**Deepor Beel**

- It is a **perennial freshwater lake** located 10 km south-west of **Guwahati (Assam).**
- It is the **only wetland in Assam** designated as a site of importance for "conservation and sustainable use" under the **Ramsar Convention on Wetlands.**
- It a **riverine wetland** in Kamrup district in the **lower Brahmaputra valley.**
- It is also a **grooming site for bird enthusiasts** as it sustains over 200 species of birds, including about 70 species of migratory birds.

## 8.4 J&K Panel to review allegations of illegal mining

Recently, the J&K administration has constituted a **four-member committee** to look into **allegations of illegal mining of minor minerals** in and around River Tawi.

**J&K Panel on Illegal Mining**

- The committee will be headed by **Director Geology and Mining O P Bhagat.**
- It will have **in depth examination of alleged illegal mining activities/operations** of stone crusher units in and around River Tawi in violation of High Court directions.
- The terms of the committee include:
    - Examining the **issue of stone crusher units** in Tawi River since 2018;
    - Measures to **curb illegal mining in river Tawi** in compliance of high court orders; and
    - **Examine allegations made and representations received** about high

handedness of the department.

**Tawi River**

- It is a river that flows through the **city of Jammu.**
- It is a major **left bank tributary** of the river Chenab.
    - The river crosses into **Pakistan's Punjab** and **joins Chenab River.**
- It originates from the lap of **Kailash Kund glacier** and adjoining area southwest of Bhadarwah in Doda district.
- The catchment area of the river up to **Indian border (Jammu) is 2168 km²** and falls in the **districts of Jammu, Udhampur and a small part of Doda.**
- It is a belief of the Hindus of Jammu city that the **river was brought to Jammu by 'Raja Pehar Devta'** to cure his father and was given the throne of Jammu City and was declared as 'Raja'.

## 8.5 Volcanic Eruption in Mount Sinabung

Recently, the **Mount Sinabung** has erupted again and belching a massive column of volcanic ash and smoke 3,000 metres (3 km) into the sky.

**Mount Sinabung**

- It is a **Pleistocene-to-Holocene stratovolcano** of andesite and dacite.
- It is located in the Karo plateau of **Karo Regency, North Sumatra, Indonesia**.
- It is located on the **seismically active zone** known as the **"Ring of Fire"** i.e. an arc of volcanoes and fault lines encircling the Pacific Ocean.

**Why volcanic eruption is common in Indonesia?**

- Indonesia is **home to many active volcanoes** due to its position on the **"Ring of Fire" or the Circum-Pacific Belt.**
- The Circum Pacific Belt is an **area along the Pacific Ocean** characterised by active volcanoes and frequent earthquakes.
- The Ring of Fire is home to about **75 per cent of the world's volcanoes** and about

90 per cent of its earthquakes.

- It is a **horseshoe-shaped seismically active belt of earthquake epicentres**, volcanoes, and tectonic plate boundaries that fringes the Pacific basin.
- It follows chains of **island arcs** such as Tonga and New Hebrides, the Indonesian archipelago, the Philippines, Japan, the Kuril Islands, and the Aleutians, as well as other arc-shaped geomorphic features, such as the western coast of North America and the Andes Mountains.

**Reasons for Volcanic Eruption**

- There are three types of volcanoes i.e. **active, dormant or extinct.**
- An eruption takes place when **magma (a thick flowing substance)**, that is formed when the **earth's mantle melts**, rises to the surface.
    - As **magma is lighter than rock**, it is able to rise through vents and fissures on the surface of the earth.
    - The **molten magma is called Lava** after eruption takes place.
- The **explosiveness of volcano** is dependent on the **composition of magma** which means:
    - When the magma is **runny and thin**, **gases can easily escape it** and the magma will flow out towards the surface.
    - If the magma is **thick and dense** and **gases cannot escape it**, it builds up pressure inside resulting in a violent explosion.

## 8.6 Kaziranga Animal Corridor

There are cases of clearance of forest land, digging and construction activities on at least three animal corridors within the **eco-sensitive zone** of the **Kaziranga National Park and Tiger Reserve.**

- The **Supreme Court of India in its 2019 order** had said that **"No new construction shall be permitted on private lands which form part of the nine identified animal corridors."**
- **Animal Corridor**
    - **Wildlife or animal corridors** are meant to ensure safe passage for

animals between two isolated habitats.

- In wildlife parlance, corridors are mainly of two types: functional and structural.
    - **Functional corridors** are defined in terms of functionality from the perspective of the animal (basically areas where there have been recorded movement of wildlife).
    - **Structural corridors** are contiguous strips of forested areas and structurally connect the otherwise fragmented blocks of the landscape.
- When structural corridors are affected by human anthropogenic activities, functional corridors automatically widen because of animal use.

- **Kaziranga Animal Corridor**
    - A special committee formed by the Supreme Court in its report had recommended the **delineation of nine animal corridors** in Kaziranga National Park (KNP). The nine identified animal corridors are:
        - Amguri, Bagori, Chirang, Deosur, Harmati, Hatidandi and Kanchanjuri are in Nagaon district and Haldibari and Panbari corridors are in Golaghat district of Assam.
        - The nine corridors that already exist behave as functional corridors, but according to the new recommendation, the corridors will **act as both structural and functional,** on the basis of need.
    - The report suggested that **structural corridors should be made free of all human induced disturbances** except for the forestry and wildlife management practices.
        - On the other hand, **functional corridors** (which might become important when structural corridors are disturbed), can have **regulated multi-use with restrictions on land use change.**
    - **Significance of Animal Corridors:**
        - These corridors are **crucial for the rhinos, elephants, tigers, deer and other animals that escape a flooded Kaziranga**

**during the monsoon** months for the safety of the hills of Karbi Anglong district beyond the highway skirting the southern boundary of the tiger reserve.

- Once the rain clear, the animals make their way back to the grasslands.

- **Kaziranga National Park and Tiger Reserve:**
  - It is located in the State of **Assam** and covers 42,996 Hectare (ha).
  - It is the single largest undisturbed and representative area in the **Brahmaputra Valley floodplain.**
  - It was declared as a National Park in 1974.
  - It has been declared a **tiger reserve** since 2007.
  - It was declared a **UNESCO World Heritage Site in 1985.**
  - It is recognized as an **Important Bird Area** by BirdLife International.
  - It is the home of the world's most **one-horned rhinos.**
    - Pobitora Wildlife Sanctuary has the highest density of one-horned rhinos in the world and second highest number of Rhinos in Assam after Kaziranga National Park.
  - The **National Highway 37** passes through the park area.
  - The park also has more than 250 seasonal water bodies, besides the **Diphlu River** running through it.
- **Other National Parks in Assam:**
  - Dibru-Saikhowa National Park,
  - Manas National Park,
  - Nameri National Park,
  - Rajiv Gandhi Orang National Park.

## 8.7 Anamalai Tiger Reserve (ATR)

Recently, the residents of two tribal settlements within the limits of the **Anamalai Tiger**

**Reserve (ATR)**, were gearing up for the annual festival of their local deity, **Vairapattan**.

- The **Kattupatti and Kuzhipatti settlements of Pulayar community** have barely heard of the acronym COVID-19.

**Anamalai Tiger Reserve (ATR)**

- It is the **29th** and one of the four **Tiger Reserves in Tamil Nadu.**
- It lies South of the Palakkad gap in the **Southern Western Ghats.**
- It was originally a territorial division known as **Coimbatore South Forest division** which was declared as **wildlife sanctuary in 1976.**
    - It forms part of the **Anamalai Parambikulam Elephant Reserve** declared in 2003.
    - The Wildlife sanctuary was declared as **Tiger Reserve in April 2007** and declared as a **critical Tiger habitat in December 2007.**
- There are Six Tribal Communities (VIZ) **Malasar, Malaimalasar, Kadar, Muduvar, Pulayar and Eravalar** with the population of nearly 6000 living in 35 Settlements.
- It supports diverse habitat types viz. **Wet evergreen forests, semi evergreen forests, moist deciduous, dry deciduous, dry thorn** and **shola forests.**

**Pulayar community**

- It is also known as **Pulaya, or Pulayas or Holeya or Cheramar.**
- The Pulayas are a tribe spread out in the **Kodaikanal hills.**
- It is one of the main social groups found in **Kerala, Karnataka** and in historical **Tamil Nadu or Tamilakam.**
- The spiritual life of the Pulaya includes certain **ancient magic rituals and practices** that have a certain reputation.
- Pulayas are noted for their **music, craftsmanship, and for certain dances** which include:
    - **Kōlam-thullal:** A mask dance which is part of their exorcism rituals, and
    - **Mudi-āttam:** A hair-dance which has its origins in a fertility ritual.

- The 1976 Government of India Gazette notifies **Pulayan, Cheramar as Scheduled Caste (SC).**
- The government of Tamil Nadu has **not officially recognised** them as a Scheduled Tribe.

## 8.8 Wonder Bamboo from Tamil Nadu to mitigate climate change

Recently, the **Tamil Nadu Agricultural University (TNAU)** has designed an **'oxygen park'**within its premises at Coimbatore with **Beema Bamboo.**

**Beema Bamboo**

- It is a **superior clone**, selected from **Bambusa balcooa**.
- It is a **higher biomass** yielding bamboo species.
- It has been developed by the **conventional breeding method.**
- It is **not a product** of genetically modified organisms.

**Features of Beema Bamboo**

- It is considered to be one of the **fastest-growing plants.**
- It **grows one-and-a-half feet per day** under tropical conditions.
- It is said to be the best **'carbon sink'** to mitigate carbon dioxide emissions.
- It **does not produce any seed** and **does not die** also for several hundred years and keeps growing without death.
- A two-year-old Beema Bamboo, when planted in the soil, grows at a speed of **1.5 foot per day** and reaches a **maximum height of 30 feet** in 4 weeks.
- Its **rhizome and root development** provides a strong foundation, making the plant robust against natural forces.

**Significance of Bamboo**

- A fully-grown bamboo tree may generate over **300 kilograms of oxygen annually** and it may be sufficient for one person for one year.
- A four-year-old bamboo may **absorb over 400 kg of carbon dioxide per**

**annum** from the surrounding areas.

- Bamboo raised on one acre can **sequester 80 tonnes of carbon dioxide annually.**
- The Beema Bamboo can be an excellent choice fo**r making the earth greener and mitigating climate change.**

## 8.9 Cyclone Tauktae

Recently, the **Indian Meteorological Department (IMD)** has warned against Cyclone Tauktae, strengthening and intensifying into a 'very severe' cyclonic storm.

**Cyclone Tauktae**

- It is formed over **Southeast Arabian Sea.**
- It shall cause **extremely heavy rainfall** (more than 204 mm) over **Lakshadweep, Kerala, ghats of Tamil Nadu, coastal Karnataka.**
- The word **Tauktae** has been suggested by **Myanmar.**
- It means **'gecko'**, a distinctively **vocal lizard**, in the **Burmese language.**

**How are Cyclones Named?**

- The **World Meteorological Organisation (WMO)** maintains rotating lists of names, which are appropriate for each **Tropical Cyclone basin.**
    - If a cyclone is particularly **deadly or costly,** then its name is **retired and replaced by another.**
- The name list is proposed by the **National Meteorological and Hydrological Services (NMHS) of the WMO members** of a specific region and approved by the respective tropical cyclone regional bodies at their annual or biennial sessions.

**Why is a Cyclone Named?**

- It came into the practice for **quick identification of the storms in warning messages**because names are presumed to be easier to remember than latitude and longitude numbers and technical terms.
- The names make it **easier for the media to report on tropical cyclones** and increase community preparedness.

- As per WMO, the use of short, distinctive names in written as well as spoken communications is **quicker and less subject to error** than the older more cumbersome latitude-longitude identification methods.

**Naming cyclones in the Bay of Bengal and Arabian Sea**

- The World Meteorological Organisation/United Nations Economic and Social Commission for Asia and the Pacific **(WMO/UNESCAP) Panel on Tropical Cyclones**agreed in principle to **assign names to the tropical cyclones** in the Bay of Bengal and the Arabian Sea.
- It was decided to name cyclones in Bay of Bengal and Arabian Sea during WMO/ESCAP's **27th session held in Muscat, Sultanate of Oman, in 2000.**
- The naming of the tropical cyclones over the **north Indian Ocean commenced from September 2004**, with names provided by eight members.
    - The members are **Bangladesh, India, Myanmar, Maldives, Oman, Pakistan, Sri Lanka** and **Thailand.**
- In September 2018, it was decided to prepare a fresh list of names of tropical cyclones including representation from five new member countries, viz., **Iran, Qatar, Saudi Arabia, United Arab Emirates and Yemen.**

## 8.10 US Slider Turtle

The **US Slider Turtle**, popular as pet, is threatening to **invade the natural water bodies**across the Northeast which is home to 21 of the 29 vulnerable native Indian species of freshwater turtles and tortoises.

**US Slider Turtle**

- The red-eared slider **(Trachemys scripta elegans)** derives its name from **red stripes around the part where its ears would be** and from its **ability to slide quickly off** any surface into the water.
- It is **native** to the **U.S. and northern Mexico.**
- It can live up to **20 years** in captivity.
- The diseases such as **metabolic bone disease (MBD) and vitamin A deficiency** are seen in many kinds of reptiles including red eared sliders.

- It is an **aquatic turtle, a strong swimmer,** and in the wild, will commonly be seen basking on rocks, logs, or other surfaces above the water.
- The red-eared slider prefers marshes, ponds, and slow-moving water that supply food and basking areas.

**Why US Slider Turtle is a threat to Indian native species of turtles?**

- The NGO 'Help Earth' found red-eared sliders in the **Deepor Beel Wildlife Sanctuary**and the Ugratara temple pond in Guwahati.
- The report said a red-eared slider was **collected from an unnamed stream**, connected to the Tlawng River, on a farm near Mizoram capital Aizawl.
    - The red-eared slider has **already affected States such as Karnataka and Gujarat.**
- The prevention of this invasive species from **overtaking the Brahmaputra and other river ecosystems** in the Northeast is crucial because the Northeast is home to more than 72% of the turtle and tortoise species in the country.
- The people who keep it as pets become sensitive about turtle conservation but **endanger the local ecosystem** by releasing them in natural water bodies.
- It is regarded as the **most invasive species** of turtles in the world.
- According to researchers, they can have a **devastating impact on the aquatic life**there.
- The red-eared sliders **do not have any natural predators** because they are an invasive species.
- They pose a **threat to both native aquatic animals and plants** since they are omnivores.

## 8.11 Common Crane in Ireland

Recently, the **common crane** has returned to the island nation after more than three centuries after it disappeared from Ireland.

**Common Crane**

- It is a bird that is part of its folklore and was a **popular pet during medieval times.**

- It is **typically seen in Ireland during the winter**, but is not sighted during the breeding season.
    - A pair of cranes was spotted in 2020 on a **restored peat bog** which is a type of wetland that is mostly found in northern latitude countries.
- The birds are in **Ireland's Midlands region,** but their exact location has been kept secret to protect them.
- Cranes **stand at 4 feet tall** with a wingspan of over 7 feet, and used to be the **largest birds in Ireland.**
- They are **connected with the history and culture of the country**, featuring in folklore tales and in the names of towns.
- It breeds across **temperate Eurasia** and migrates south across its range.
- In its normal breeding range, Common Cranes are found in **wet meadows, forest clearings, wetlands, bogs, and grassy fields.**
- It feeds on **grains and seeds, berries, and tender shoots** and roots of plants.
- The Common Crane is a **winter visitor to the arid plains of Western India**, primarily Gujarat and Rajasthan.
- It is listed as **'Least Concern'** under IUCN Red List of Threatened Species.

**Bog Wetland**

- Bogs (also called quagmires) are **soft, spongy wetlands** that accumulate peat.
- The peat is a fossil fuel that is used for **heating homes and businesses in northern Europe.**
- Bogs also act as **carbon sinks, sequestering around 200 million tons of carbon** from the environment in Siberia and Scandinavia.

**Importance of cranes in environment**

- **Crown Jewels of Conservation:** Culturally revered across much of the world, cranes are flagships for saving some of the most beautiful, diverse places on Earth.
- **Indicators:** Highly dependent on healthy wetlands and freshwater, cranes are excellent indicators for the state of our environment.

**Sarus Crane**

- It is the **tallest flying bird** in the world.
- The current range of the Indian Sarus Crane includes the plains of **northwestern India, the western half of Nepal's Terai Lowlands and parts of Pakistan.**
- The **Eastern Sarus Crane** occurs in **Myanmar, Laos, Vietnam** and **Cambodia.**
- It is listed in **Schedule IV** of the Wildlife (Protection) Act 1972.
- It is protected as **Vulnerable** on IUCN Red List.
- It is a **state bird of Uttar Pradesh.**
- The **species mostly lives and breeds in and around wetlands** as well as marshy areas, small lakes and cultivated land with the presence of water, like paddy fields.

## 8.12 Impact of Lightning on Animals

Recently, **18 elephants died on a hilltop in Assam** and the preliminary post-mortem report indicates they had been **struck by lightning.**

**How does lightning kill animals?**

- When current flows through the ground following a lightning strike, the **electric potential (voltage) is highest at the point of the strike**, and **decreases with distance**along the direction of the flow.
- If an elephant is facing the strike point, the current will flow from the **front feet (higher potential) to the hind feet (lower potential)**, electrocuting it in the process.
- **Direct Flash:** An animal in an open field may be struck directly by lightning if part of its body protrudes over other objects in the vicinity.
    - The taller animals are more vulnerable.
- **Side Flash:** When lightning strikes a tall object such as a tree, it may generate a side flash that can strike an animal standing underneath the tree.
- **Touch Potential:** If one part of a tall animal's body is in contact with the ground while another part, at a higher elevation, comes in contact with a lightning-struck

object, a partial current may pass through its body.

- **Step Potential:** The most common lightning hazard among four-legged animals.
    - When an animal's front and hind feet are far enough apart, a partial current may pass through the body in certain circumstances.

**Vulnerability of Elephants**

- Since an **elephant's front and hind feet are wide apart**, it would appear to make it more vulnerable than a smaller animal, such as a rat.
- The **potential difference increases with increasing distance** between the two feet.
    - The **larger the potential difference**, the **greater the current** through the body.
- An animal with a **larger body mass can withstand a larger current** through **step potential.**
- An elephant could be subjected to a larger step potential but the chance that the **current through its body becomes lethal is less.**
- The elephants would potentially have a higher chance of getting struck by lightning compared to other species because of their height.

**Impact of direct flash on elephants**

- The chances of getting directly struck by lightning **highly depend on the vicinity**because the **tallest objects in the vicinity attract the lightning.**
- If there are **tall trees (higher than the elephants)** the chance that **lightning strikes them directly is not big** but if they are in an **open grassfield, the chances are bigger.**

**How does lightning occur?**

- Lightning is an **electrical discharge caused by imbalances** between storm clouds and the ground, or within the clouds themselves.
- Lightning is **extremely hot** i.e. a flash can heat the air around it to temperatures five times hotter than the sun's surface.
- The heat causes **surrounding air to rapidly expand and vibrate,** which creates the pealing thunder we hear a short time after seeing a lightning flash.

- The **cloud-to-ground lightning bolts are a common phenomenon** i.e. about 100 strike Earth's surface every single second.
    - A typical cloud-to-ground lightning bolt begins when a **step-like series of negative charges, called a stepped leader, races downward from the bottom of a storm cloud toward the Earth** along a channel at about 200,000 mph.
- Lightning's extreme heat will **vaporize the water inside a tree**, creating steam that may blow the tree apart.

## 8.13 New Skink Species from Western Ghats

In September 2019, a group of herpetologists gathered at Anaikatti hills in Coimbatore for the **South Asian Reptile Red List Assessment** organized by the International Union for Conservation of Nature (IUCN).

- When Achyuthan Srikanthan from the Indian Institute of Science, Bengaluru, suggested an impromptu night visit to a nearby private farm, they stumbled upon a new species i.e. an **Asian gracile skink.**

**Asian Gracile Skink**

- It is named as **Subdoluseps nilgiriensis.**
- The reptile has a **slender body of just about 7 cm** and is sandy brown in colour.
- The new species is **closely related to Subdoluseps pruthi** found in parts of the Eastern Ghats.
- The new species was found in a **dry deciduous area**, showing that even the dry zones of our country are home to unrealised skink diversity.
- It is currently considered a vulnerable species as there are **potential threats from seasonal forest fires**, **housing constructions** and **brick kiln industries** in the area.
- Most skinks are **diurnal and are usually secretive.**
- It is **only the third skink species** discovered from mainland India in the last millennium.
- Skinks are **non-venomous** but they resemble snakes because of the often **inconspicuous limbs** and the way they move on land.

## 8.14 Impact of Climate Change on World's Oldest Cave Art

Recently, the researchers in the online peer-reviewed open access journal **'Scientific Reports'** have reported that **world's oldest cave art** are weathering at an alarming rate due to climate change.

### World's Oldest Cave Art

- It is a **Pleistocene-era rock paintings** dating back to 45,000-20,000 years ago.
- It is located in cave sites in southern **Sulawesi, on the Indonesian island of Sulawesi.**
- The limestone cave walls are **adorned with hand stencils of red and mulberry tint**, in addition to paintings of native mammals and human-animal hybrids.

### Significance of the cave paintings

- A team of Australian and Indonesian archaeological scientists, conservation specialists, and heritage managers **examined 11 caves and rock-shelters** in the **Maros-Pangkep region in Sulawesi.**
- The artwork in the area includes what is believed to be the **world's oldest hand stencil created by pressing the hand on a cave wall**, and spraying wet red-mulberry pigments over it.
- A nearby cave features the **world's oldest depiction of an animal,** a warty pig painted on the wall 45,500 years ago.
- The cave art of Sulawesi is much older than the **prehistoric cave art of Europe.**

### Key Highlights

- The researchers studied flakes of rock that have **begun to detach from cave surfaces to find that salts** in three of the samples comprise calcium sulphate and sodium chloride.
- The artwork made with **pigments was decaying** due to a process known as **haloclasty.**
    - It is triggered by the **growth of salt crystals due to repeated changes** in temperature and humidity, caused by alternating wet and dry weather in

the region.

- Indonesia has also **experienced several natural disasters** in recent years, which have quickened the process of deterioration.
- The extreme patterns of **increased seasonal moisture from monsoonal rains** and worsening droughts are accelerating rock art deterioration.

**Recommendations for protecting World's Oldest Cave Art**

- The area is known to be **home to over 300 cave paintings**, and more are being discovered with further explorations.
- It is only recently that **accurate dating has been made possible with newer techniques**, enriching our knowledge of their cultural and historical significance.
- The researchers have recommended **regular physical and chemical monitoring of the sites**, akin to the preservation efforts at the French and Spanish prehistoric cave art sites.

## 8.15 Coelacanth Fish

Recently, the **Coelacanth Fish** has been found alive in the Indian Ocean.

- A report by Mongabay states that the **deep sea fish hunters** were responsible for the appearances of the coelacanth over the decades.

**Coelacanth Fish**

- It is an **extremely rare** species of fish.
- It is a **prehistoric fish species** dating back hundreds of millions years ago
- The **first living coelacanth was caught in 1938**, when a group of fishers set gill-nets off the southwest coast of Madagascar in deeper waters.
- The increasing demand for **shark fins and oil have prompted hunters to fish in deeper waters**, leading to the discovery of the rare species on the coasts off **South Africa, Tanzania, and the Comoros Islands.**
- The species **lives in undersea canyons** at depths between 100 and 500 metres.
- It is scientifically called the **Latimeria Chalumnae.**

- It is considered to be among the **early steps of the fish's evolution to terrestrial four-legged animals**.
- It is origin can be **traced back to 420 million years**.
- It is now listed as **critically endangered** by the International Union for Conservation of Nature (IUCN).
- The advent of **deep-set gillnets, or jarifa, for catching sharks**, resulted in an explosion of coelacanth captures in Madagascar and other countries in the Western Indian Ocean.

**Unique Characteristics of Coelacanth Fish**

- Coelacanths are **elusive, deep-sea creatures,** living in depths up to 2,300 feet below the surface.
- The most striking feature of this "living fossil" is its **paired lobe fins** that extend away from its body like legs and move in an alternating pattern, like a trotting horse.
- Its unique characteristics include a **hinged joint in the skull** which allows the fish to widen its mouth for large prey.
- Its **oil-filled tube, called a notochord**, serves as a backbone and thick scales common only to extinct fish.

## 8.16 Six Indian sites added to tentative list of UNESCO World Heritage Sites

Recently, the **Ministry of Culture** has announced that **six Indian sites** have been added to the tentative list of **UNESCO's world heritage sites**.

- The six sites are namely **Satpura Tiger Reserve**, Iconic riverfront of the historic city of **Varanasi**, **Megalithic site of Hire Benkal**, **Maratha Military Architecture** in Maharashtra, **Bhedaghat-Lametaghat** in Narmada Valley-Jabalpur, and **temples of Kanchipuram**.

**Satpura Tiger Reserve**

- It is located in **Madhya Pradesh.**
- It is home to **26 species of the Himalayan region** including reptiles, and **42 species of Nilgiri areas.**

- It is the **largest tiger-occupied forest** and also has the largest tiger population.
- One of the criteria on which the national park made it to the tentative list includes:
    - Its **beautiful silence** where one can even hear the snoring of the beers and roaring of the tigers clearly with such stunning exceptional visual delights.
    - Its location adds on to its **aesthetic and incredible values.**

**Ghats of Varanasi**

- The Ganges riverfront of **Varanasi, Uttar Pradesh**, has been vying for the UNESCO tag for several years now.
- Varanasi's riverfront mainly falls into the **second category of cultural properties**, i.e. groups of buildings, groups of separate or connected buildings.
- The Ganga River with its riverfront ghats also fulfill the criteria of **Cultural Landscapes** as designated in Article 1 of the Convention.

**Megalithic site of Hire Benkal**

- The **2,800-years-old** megalithic site of Hire Benkal is located in **Karnataka.**
- It has made it to the tentative list owing to the fact that it is one of the **largest prehistoric megalithic settlements** where some funerary monuments are still intact.

**Maratha Military Architecture in Maharashtra**

- There are **12 forts in Maharashtra** dating back to the era of the **17th-century Maratha king Chhatrapati Shivaji.**
- They are namely **Shivneri** (the birthplace of Shivaji); **Raigad** (the capital fort rebuilt for the coronation of the Maratha king), **Torna** (the first fort of the Maratha empire), **Rajgad, Salher-Mulher, Panhala, Pratapgad, Lohagad, Sindhudurg, Padmadurga (Kasa), Vijaydurg and Kolaba.**
- The theme for the serial nomination of these forts is **'Maratha Military Architecture in Maharashtra and Guerrilla Warfare'.**

**Bhedaghat-Lametaghat in Narmada Valley- Jabalpur**

- It is an iconic site from **Madhya Pradesh.**
- Bhedaghat, often referred to as the **Grand Canyon of India**, is a town in the Jabalpur district.
- It is known for its **marble rocks** and their various **morphological forms on either side of the Narmada River** which flows through the gorge.
- It has also been observed that the **magical marble mountains assume different colours** and even shapes of animals and other living forms as one moves through them.
- **Several dinosaur fossils have been found** in the Narmada valley, particularly in Bhedaghat-Lametghat area of Jabalpur.
    - In 1828, the **first Dinosaur fossil** was collected from Lameta Bed by William Sleeman.

**Temples of Kanchipuram**

- It is located in **Tamil Nadu.**
- It is dotted with **ancient temples** that are architectural marvels and a visual treat.
- It is situated on the banks of **River Vegavathi.**
- It once had 1,000 temples, of which **only 126 (108 Shaiva and 18 Vaishnava)** now remain.
- Its rich legacy has been the **endowment of the Pallava dynasty**, which made the region its capital between the 6th and 7th centuries.

## 8.17 Kyasanur Forest Disease (KFD)

Recently, a **new point-of-care test** has been found to be highly sensitive in the rapid diagnosis of **Kyasanur forest disease (KFD).**

**New Point-of-Care Test**

- It has been developed by **ICMR-National Institute of Virology.**
- It would be beneficial for the diagnosis of KFD as the outbreaks mainly happen in remote areas, where there is **lack of well-equipped sample handling and**

**laboratory testing facilities.**

- It would be useful in **quick patient management and controlling** further spread of the virus.
- The ICMR-NIV, Pune, collaborated with **Molbio Diagnostics Pvt Ltd, Goa**, which has developed the microchip-based Truenat TM KFD Point of Care Test (PoCT).
- It includes a **battery-operated PCR analyser**, which is a portable, lightweight and universal cartridge-based sample pre-treatment kit and nucleic acid extraction device that aid in sample processing at the point of care.

**Kyasanur Forest Disease (KFD)**

- It was first identified in **Kyasanur forest of Shimoga district in Karnataka** during an investigation of monkey mortalities in 1957.
- The disease is caused by a **Kyasanur Forest disease virus**, which primarily affects humans and monkeys.
    - Kyasanur Forest disease virus (KFDV) is a **member of the virus family Flaviviridae.**
- It is characterised by **chills, frontal headache, body ache, and high fever** for five to 12 days with a case fatality rate of 3 to 5 per cent.
- **Hard ticks (Hemaphysalis spinigera)** are the reservoir of KFD virus.

**Transmission of Kyasanur Forest Disease (KFD)**

- The **transmission to humans may occur after a tick bite or contact** with an infected animal, most importantly a sick or recently dead monkey.
- **No person-to-person transmission** has been described.
- Large animals such as goats, cows, and sheep may become infected with KFD but play a **limited role in the transmission of the disease**.
- These animals provide the **blood meals for ticks and it is possible for infected animals with viremia** to infect other ticks, but transmission of KFDV to humans from these larger animals is extremely rare.
- There is **no evidence of disease transmission** via the unpasteurized milk of any of these animals.

**Diagnosis of Kyasanur Forest Disease (KFD)**

- It can be made in the **early stage of illness by molecular detection** by PCR or virus isolation from blood.
- The serologic testing using **enzyme-linked immunosorbent serologic assay (ELISA)** can be performed.

## 8.18 GI certified Gholvad Sapota

Recently, a consignment of **Dahanu Gholvad Sapota** from Palghar district of Maharashtra was shipped to the United Kingdom in a major boost to exports of **Geographical Indication (GI) certified products.**

**GI certified Gholvad Sapota**

- The GI certification of **Ghovad Sapota** is held by **Maharashtra Rajya Chikoo Utpadak Sangh**.
- It is believed that the **unique taste is derived from calcium rich soil** of Gholvad village.
- The Dahanu Gholvad Sapota, sourced from the **authorized GI users**, were sorted and graded from the APEDA assisted and registered packhouse facility.

**Cultivation of Sapota**

- Sapota is grown in many states such as **Karnataka, Gujarat, Maharashtra, Tamil Nadu, West Bengal** and **Andhra Pradesh.**
- **Karnataka** is known to be the **highest grower of the fruit**, followed by Maharashtra.

## 8.19 A-76: World's Largest Iceberg

An **enormous iceberg 'A-76'** has **calved from the western side of the Ronne Ice Shelf,** lying in the **Weddell Sea, in Antarctica.**

- It measures around 4320 sq km in size – **currently making it the largest berg in the world.**

- The **newly calved berg 'A-76'** was spotted in recent satellite images captured by the **Copernicus Sentinel-1 mission.**
    - Sentinel-1 is one of the missions of the European Space Agency (ESA) under Copernicus initiative (an earth observation programme).
- It has **surpassed the now second-place A-23A,** about 3,380 sq km in size and also floating in the **Weddell Sea.**

- **Iceberg:**
    - An iceberg is **ice that broke off from glaciers or shelf ice** and is floating in open water.
    - Icebergs **travel with ocean currents** and either get caught up in shallow waters or ground themselves.
    - The **US National Ice Center (USNIC)** is the **only organisation** that names and tracks Antarctic Icebergs.
        - Icebergs **are named according to the Antarctic quadrant** in which they are spotted.
- **Ice Shelves:**
    - An ice shelf is **a floating extension of land ice.** The Antarctic continent is surrounded by ice shelves.
    - The **Ronne Ice Shelf** on the flank of the Antarctic Peninsula is **one of the largest of several enormous floating sheets of ice** that connect to the **continent's landmass and extend out into the surrounding seas.**
- **Iceberg Calving:**
    - **Meaning:**
        - **Calving** is the **glaciological term for the mechanical loss** (or simply, breaking off) **of ice** from a glacier margin.
        - Calving is most common when a glacier flows into water (i.e. lakes or the ocean) but can also occur on dry land, where it is known as **dry calving.**
    - **Recent Cases of Calving:**
        - Up to the end of the 20th century, the **Larsen Ice Shelf** (on the

West Antarctic Peninsula) had been stable for more than 10,000 years.

- In 1995, however, a huge chunk broke off, followed by another in 2002.
- This was followed by the **breakup of the nearby Wilkins Ice Shelf in 2008 and 2009, and A68a in 2017.**

- **Concerns:**
  - Periodic calving off of large chunks of those shelves is part of a **natural cycle,** but the process has been **accelerated by climate change.**
  - **Average sea levels** have risen about **nine inches since 1880,** and about **a quarter of that increase** comes from **ice melting in the Greenland and Antarctica ice sheets,** along with land-based glaciers elsewhere.
  - According to a recent study, **more ambitious national goals** to cut **greenhouse gas emissions** and **slow down climate change** set recently are **not enough to stop sea levels from rising.**
    - In fact, melting glaciers and ice sheets will raise sea levels twice as fast as they would if countries fulfilled their earlier pledges under the **Paris Agreement.**

## 8.20 22nd May – International Day for Biological Diversity

The **International Day for Biological Diversity (IDB)** (International Biodiversity day) is observed on **22nd May** every year.

- The **United Nations General Assembly (UNGA)** in 1993 proclaimed **22nd May** as IDB to increase understanding and awareness of biodiversity issues.
  - The UNGA also declared the period **2011-2020** as the **United Nations (UN) Decade on Biodiversity** to promote the implementation of a strategic plan on biodiversity and its overall vision of living in harmony with nature.
  - It also declared **2021-2030** as the **UN Decade of Ocean Science**

**for Sustainable Development** and the **UN Decade on Ecosystem Restoration.**

- **2021 Theme:**
    - This year's theme is **"We're part of the solution"** which is a continuation of **2020 theme- Our solutions are in nature.**
    - This serves as a reminder that **biodiversity remains the answer to several sustainable development challenges.**
- **Some Global Initiatives to Save Biodiversity:**
    - **Convention on Biological Diversity:**
        - It is **a legally binding treaty** to conserve biodiversity that has been in force since 1993.
        - **India is a party** to the convention.
    - **Convention on International Trade in Endangered Species of Wild Fauna and Flora:**
        - It provides public, private and **non-governmental organisations** with the knowledge and tools that **enable human progress, economic development and nature conservation to take place together.**
        - **India is a member** of the convention.
- **Some Indian Initiatives For Conservation of Biodiversity:**
    - **National Plan for Conservation of Aquatic Ecosystems.**
    - **Wetland (Conservation and Management) Rules 2017.**
    - **The Biological Diversity Act, 2002.**
    - **Wild Life (Protection) Act, 1972.**

**Other Important Initiatives**

- **5th June: World Environment Day**
- **22nd March: World Water Day**
- **22nd April: Earth Day**

- **Last Saturday of March: Earth Hour**

## 8.21 Cheetah to be reintroduced in India from Africa

Recently, the Madhya Pradesh state forest minister has announced that **Cheetah is expected to be re-introduced into the country** in November 2021 at the Kuno National Park in Madhya Pradesh.

- In 2019, the Supreme Court gave the **green signal** to the Union Government for the relocation cheetahs from Africa to India.
- The **expert committee** set up by the Ministry of Environment, Forests and Climate Change has completed the assessment of the sites for relocation.
- The **six sites**, which had previously been assessed in 2010, have now been re-assessed by WII i.e.
    - **Mukundara Hills Tiger Reserve and Shergarh Wildlife Sanctuary** in Rajasthan; and
    - **Gandhi Sagar Wildlife Sanctuary, Kuno National Park, Madhav National Park and Nauradehi Wildlife Sanctuary** in Madhya Pradesh
- The expert committee has identified **Kuno National Park** as being ready for the relocation.

**Cheetah**

- It is the **world's fastest land animal** which was **declared extinct in India in 1952.**
    - India's **last spotted cheetah died in Chhattisgarh in 1947** and it was declared extinct in the country in 1952.
- It is considered **vulnerable** under the International Union for Conservation of Nature's (IUCN) red list of threatened species.
- Historically, it ranged from **Palestine and the Arabian Peninsula to Tajikistan and central India**, as well as throughout the continent of Africa excluding the zones of tropical forest and central Sahara.
- The habitats that are favored by cheetahs include **grasslands and deserts.**
- It has been protected under **Appendix I** of the **Convention on International Trade**

**in Endangered Species of Wild Fauna and Flora (CITES)** since 1 July 1975.

**Kuno National Park**

- It is located in the **Chambal region.**
- It is **spread over an area of over 750 sq km** and has a conducive environment for the cheetah.
- It comprises a considerable population of **four-horned antelopes, chinkara, nilgai, wild boar, spotted deer and sambar**, has a good prey base for the cheetahs.
- It is like an ornament in the **Vindhyan Hills of Central India.**

## 8.22 Renewable Energy Country Attractiveness Index (RECAI)

Recently, the **London-based Ernst & Young (EY)** has released the 57th edition of the **Renewable Energy Country Attractiveness Index (RECAI)**.

- It is a **biannual index** which lists the t**op 40 countries by renewable energy investment** and deployment attractiveness.
- It looks at individual categories such as **solar PV, concentrated solar power, onshore wind, offshore wind, biomass, geothermal, and hydro.**
- The 57th edition estimated that **future development to achieve net zero** will require a further investment of $5.2 trillion and highlighted the role of institutional investors in financing the energy transition.

**Key Highlights**

- The **United States** remained the most attractive market, followed by **China** for overall renewables
    - The **re-acceptance of the Paris Accord**, coupled with the recent announcement to **cut GHG levels by 50-52% as early as 2030** and **achieve 100% carbon-free power by 2035**, will likely see increased investment interest in the U.S.
    - China's position was helped by the **addition of 72.4 GW of new wind power** in 2020.
- **Australia** ranked fourth, followed by **Egypt and Israel.**

- Egypt's score was helped by the nation's ambition to **increase the supply of energy generated from renewable sources** to 42% by 2035.

- The **United Kingdom rose one place to rank fourth** for renewables investment which was driven by close to 8 GW of new offshore wind capacity allotted for development.
- The **East Asian markets Japan and South Korea** (ranking the 8th and the 17th positions respectively) also made commitments toward net zero in the past year.

**Performance of India under Renewable Energy Country Attractiveness Index (RECAI)**

- The index has once again ranked India as the **most attractive destination for solar PV investment and deployment**.
- **India scored 62.7 in solar attractiveness**, with the sector expected to grow significantly and with generation from solar PV set to surpass coal before 2040.
- **India rose one place to rank third** in the overall renewables rankings.
- India's position in the RECAI has fluctuated many times, including the **slip from the 2nd position in 2017** to the **4th position in 2018.**
- **India moved up from the 7th to the 4th position in the 56th EY RECAI** as a result of installed solar PV capacity skyrocketing, reaching more than 35GW.

## 8.23 Shahi Litchi

Recently, the season's **first consignment of Shahi Litchi from Bihar** was exported to United Kingdom by air route in a major boost to export of GI certified products.

**Shahi Litchi**

- It is mostly grown in **Muzaffarpur** and its neighbouring districts of **East Champaran, Vaishali, Samastipur and Begusarai.**
- It was accorded the **Geographical Indication (GI) Tag in 2018.**
- The **lychee (Litchi chinensis)** is the sole member of the genus Litchi in the **soapberry family, Sapindaceae.**
- It is a t**ropical and subtropical fruit tree** native to **southern China, Taiwan, Bangladesh and Southeast Asia**, and now cultivated in many parts of the world.

- There are four products from Bihar which are accorded with Geographical Indication (GI) Tag such as **Shahi Litchi, Zardalu Mango, Katarani paddy** and **Magahi Paan (betel leaf).**
- The application for **Katarani paddy**, long and thin in shape and distinctly aromatic, was moved by Katarani Dhan Utpadak Sangh, Jagdishpur village in Bhagalpur.
- **Magahi Pan** Utpadak Kalyan Samiti, Deuri village, Nawada district, had moved the application for GI tag to the unique variety of betel leaf which is adored for its softness and taste.
    - The betel leaf variety is also grown in adjoining district of Gaya.
- **Zardalu Mango** was accorded the Geographical Indication (GI) Tag in 2017.
    - It is a unique product from Bhagalpur district of Bihar and it is known for its light yellow skin and special aroma.
    - It was first planted in Bhagalpur region by Maharaja Rahmat Ali Khan Bahadur of Kharagpur.

## 8.24 Cyclone Yaas

Recently, the **National Weather Forecasting Centre** of the India Meteorological Department (IMD) had announced a **yellow message** over Odisha and Bengal coast due to **Cyclonic Storm 'Yaas'**.

### Cyclone Yaas

- It is the **name of a tropical cyclone** which is set to hit **eastern coastal areas of Odisha and West Bengal**.
- The name **'Yaas'** has been given by **Oman** and it refers to a **'tree'.**
- The word **'Yaas'** is said to have originated from the **Persian language** and it means **'Jasmin' in English**.

### Tropical cyclone

- A tropical cyclone is an **intense circular storm that originates over warm tropical oceans** and is characterised by low atmospheric pressure, strong winds followed by heavy rainfall.

- **Tropical cyclones always have an eye**, a central region of clear skies and warm temperatures.
- Cyclones are fueled by available **heat in the water bodies and the conducive temperature** for the intensification of the cyclone is 28 degrees Celsius and above.
- The **Bay of Bengal is usually warmer than the Arabian Sea** so it results in more cyclones being formed over it.

**Cyclones Naming**

- The **World Meteorological Organisation (WMO)** maintains rotating lists of names, which are appropriate for each Tropical Cyclone basin.
- If a cyclone is particularly **deadly or costly**, then its **name is retired** and replaced by another.
- The name list is proposed by the **National Meteorological and Hydrological Services (NMHS) of the WMO members** of a specific region and approved by the respective tropical cyclone regional bodies at their annual or biennial sessions.
- It came into the **practice for quick identification of the storms** in warning messages because names are presumed to be easier to remember than latitude and longitude numbers and technical terms.
- The names make it easier for the media to report on **tropical cyclones and increase community preparedness**.
- As per WMO, the use of short, **distinctive names in written as well as spoken communications** is quicker and less subject to error than the older more cumbersome latitude-longitude identification methods.

**Naming cyclones in the Bay of Bengal and Arabian Sea**

- The **World Meteorological Organisation/United Nations Economic and Social Commission for Asia and the Pacific (WMO/UNESCAP) Panel** on Tropical Cyclones agreed in principle to assign names to the tropical cyclones in the Bay of Bengal and the Arabian Sea.
- It was decided to name cyclones in Bay of Bengal and Arabian Sea during WMO/ESCAP's 27th session held in **Muscat, Sultanate of Oman**, in 2000.
- The **naming of the tropical cyclones over the north Indian Ocean** commenced

from September 2004, with names provided by eight members.

- The members are **Bangladesh, India, Myanmar, Maldives, Oman, Pakistan, Sri Lanka**and **Thailand.**
- In September 2018, it was decided to prepare a fresh list of names of tropical cyclones including representation from five new member countries, viz., **Iran, Qatar, Saudi Arabia, United Arab Emirates and Yemen**.

## 8.25 National Mission on use of biomass in thermal power plants

Recently, the Ministry of Power has decided to set up a **National Mission on use of Biomass in coal based thermal power plants.**

- In 2019, MNRE had issued a notice clarifying the **eligibility of power generated from the co-firing of biomass** in thermal power plants as renewable energy.
- The government has stated that the power generated from the **co-firing of biomass in thermal power plants is renewable energy** and is eligible for meeting the non-solar renewable purchase obligations.
- In 2020, the MNRE had **extended the validity of its biomass-based cogeneration program**.
- The program was extended until **March 31, 2021, or until the recommendations of the 15th Finance Commission** come into effect, whichever comes first.

**National Mission on use of Biomass in coal based thermal power plants**

- It is being envisaged that the Mission would have a **Steering Committee headed by Secretary (Power).**
    - It will constitute **all stakeholders** including representatives from Ministry of Petroleum & Natural Gas (MoPNG), Ministry of New & Renewable Energy (MNRE) etc.
- The Executive Committee would be headed by **Member (Thermal), CEA.**
- The **National Thermal Power Corporation (NTPC)** will play a larger role in providing logistic and infrastructure support in the proposed National Mission.
- The duration of proposed National Mission would be a **minimum 5 years.**

- The following **Sub-Groups** are also proposed to be formed under the Mission:
    - **Sub-Group 1:** To be responsible to carry out research on properties/ characteristics of biomass.
    - **Sub-Group 2:** To carry out technical specification and safety aspects including research in boiler design etc. to handle the pilot project for higher amount of co-firing of biomass with coal in pulverized coal (PC) fired boilers.
    - **Sub-Group 3:** For resolving the issues of supply chain during the mission period and sensitization programme.
    - **Sub-Group 4:** To select designated labs and certification bodies for testing of Agro-based biomass pellets and Municipal Solid Waste (MSW) pellets
    - **Sub-Group 5:** Be formed on regulatory framework and economics of biomass co-firing in coal based Thermal power plants.

**Objectives of National Mission on use of Biomass in coal based thermal power plants**

- To increase the level of **co-firing from present 5% to higher levels** to have a larger share of carbon neutral power generation from the thermal power plants;
- To take up **R&D activity in boiler design** to handle the higher amount of silica, alkalis in the biomass pellets;
- To facilitate **overcoming the constraints in supply chain** of bio mass pellets and agro- residue and its transport upto to the power plants; and
- To **consider regulatory issues** in biomass co-firing

**Purpose of National Mission on use of Biomass in coal based thermal power plants**

- It aims to **address rampant air pollution** caused by the burning of farm stubble and reduce the carbon footprint in thermal power generation.
- It aims to contribute to the **National Clean Air Program (NCAP)**.
- It would further support the **country's energy transition targets** and move towards cleaner energy sources.

## 8.26 Whiteflies: Threat to Agriculture

According to a recent study, **exotic invasive whiteflies** in India are causing **direct and indirect yield losses in agriculture, horticulture and forestry crop plants.**

- **Whiteflies** are **tiny, sap-sucking insects** that may become abundant in vegetable and ornamental plantings, especially during warm weather. They excrete sticky honeydew and **cause yellowing or death of leaves.**
- **Spread of Whiteflies**
    - The **first reported invasive spiralling whitefly *(Aleurodicus dispersus)*** is now distributed throughout India **except Jammu & Kashmir.**
    - Similarly, the **rugose spiralling whitefly *(Aleurodicus rugioperculatus)*** which was reported in Pollachi, Tamil Nadu in 2016 has now spread throughout the country including the islands of Andaman Nicobar and Lakshadweep.
    - *Aleurodicus dispersus* and *Aleurodicus rugioperculatus* have been **reported on over 320 and 40 plant species,**respectively.
    - Most of the whitefly species are **native to the Caribbean islands or Central America.**
- **Reasons for Spread**
    - The host range of all of the invasive whiteflies has been increasing due to their **polyphagous nature** (ability to feed on various kinds of food) and **prolific breeding.**
    - The **increasing import of plants and increasing globalization and movement of people** has aided the spread of different varieties and their subsequent growth into invasive species.
    - Whiteflies reduce the production yield and also damage crops. Approximately **1.35 lakh hectares of coconut and oil palm** in India are **affected by the rugose spiralling whitefly.**
    - **Other invasive whiteflies** were also found to **expand their host range on valuable plant**

**species,** especially coconut, banana, mango, sapota, guava, cashew, oil palm, and ornamental plants such as bottle palm, false bird of paradise, butterfly palm and important medicinal plants.

- Whiteflies have been difficult to control by using available synthetic insecticides.

- **Controlling Whiteflies:**
  - **Biological Control Methods:**
    - They are currently being controlled by naturally occurring **insect predators, parasitoids** (natural enemies of pests, provide biological control of pests in greenhouses and crop fields) and **entomopathogenic fungi** (fungi that can kill insects).
    - **Entomopathogenic fungi** specific to whiteflies are isolated, purified, grown in the lab or mass-produced and applied into the whitefly infested field in combination with the release of lab-reared potential predators and parasitoids.
    - They are not just **environmentally friendly** but also **economically feasible.**

**Other Pests/Insects Attacking Crops**

- **Fall Armyworm (FAW) Attack:**
  - It is a dangerous transboundary insect with a high potential to spread rapidly due to its natural distribution capacity and opportunities presented by international trade.
  - In 2020, the Directorate of Agriculture reported an armyworm attack on the standing crops in the northeastern Dhemaji district of Assam and the **Food and Agriculture Organisation (FAO)** has launched a **Global Action for FAW** Control as a response to the international threat posed by the armyworms.
- **Locust Invasion**:
  - A locust (Migratory insect also known as tiddi) is a large, mainly tropical grasshopper with strong powers of flight. They differ from ordinary grasshoppers in their ability to change behaviour (gregarize) and form

swarms that can migrate over large distances.

- Locust adults can eat their own weight every day, i.e. about two grams of fresh vegetation per day. A very small swarm eats as much in one day as about 35,000 people, posing a devastating threat to crops and food security.

- **Pink Bollworm (PBW):**
    - It *(Pectinophora gossypiella)*, is an insect known for being a pest in **cotton farming.**
    - The pink bollworm is native to Asia, but has become an invasive species in most of the world's cotton-growing regions.

- **Continuous monitoring** of the **occurrence of invasive species,** their host plants and **geographical expansion** is needed, and if required, import of **potential natural enemies** for bio-control programmes can also be carried out.

## 8.27 New Spider Cricket from Chhattisgarh

Recently, a team of zoologists headed by Dr Ranjana Jaiswara of the Zoology Department of Punjab University, Chandigarh has discovered a **new spider cricket from Chhattisgarh.**

**New Spider Cricket from Chhattisgarh**

- It has been found in the **Kurra caves of Chhattisgarh**.
- The **new subgenus was named Jayanti** after Professor Jayant Biswas, one of the leading cave explorers in the country, who assisted the team.
- It has become the twelfth subgenus, or species, of cricket identified under the genus **Arachnomimus Saussure, 1897.**

**Arachnomimus Saussure, 1897**

- Arachnomimus is the genus name given by **Swiss Entomologist Henri Louis Frédéric de Saussure in 1878** to crickets that resembled spiders.
- The word Arachnomimus is derived from two Ancient Greek words **arakhne means "spider"** and **mimos, means "imitator, actor".**
- It is apt because crickets of this group are commonly called **spider crickets**

**because of their smaller body size and long legs.**

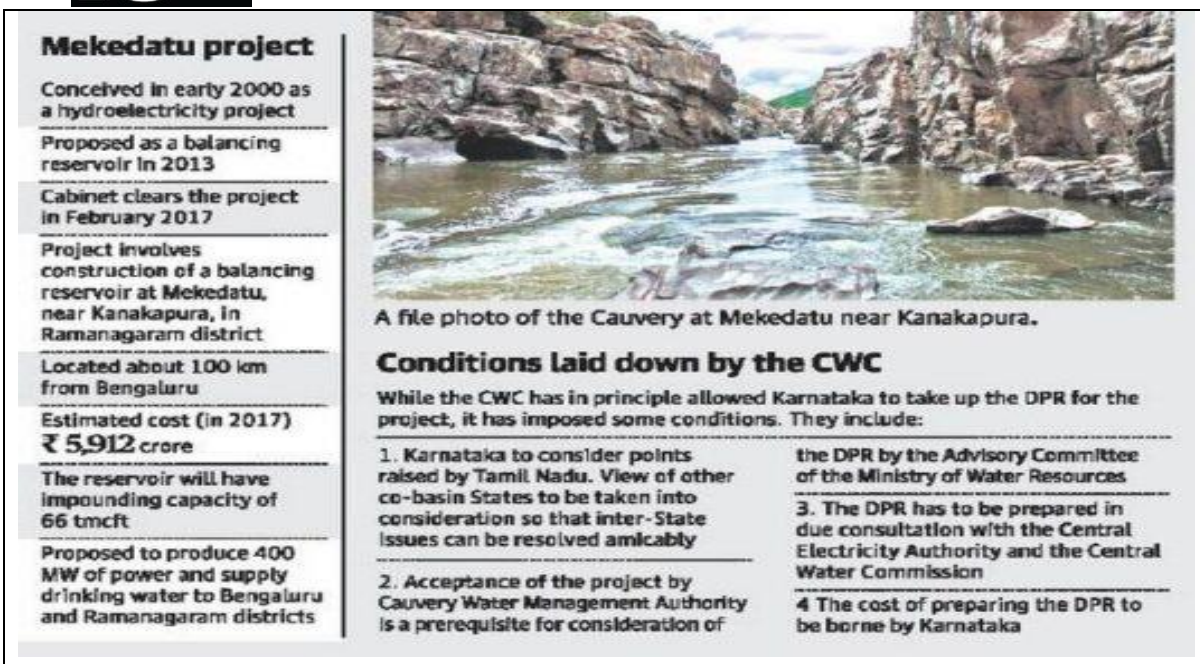
**Characteristics of New Spider Cricket from Chhattisgarh**

- The newly discovered subgenus, **Indimimus, is different from the two subgenera,**Arachnomimus and Euarachnomimus, because of the male genitalia structure.
- The insects have a **lock-and-key model genitalia structure** which is unique to each subgenus.
- The genus and subgenus are **taxonomic levels** created by taxonomists to classify organisms.
- A genus is represented by a set of **diagnostic characters.**
- The certain variations in characters **compel taxonomists to divide the genus** into subgenus and document the variation.

## 8.28 NGT forms panel to probe allegations of unauthorised construction in Mekedatu

The National Green Tribunal (NGT), Southern Zone has appointed **a joint committee** to look into allegations of **unauthorised construction activity** taking place in **Mekedatu**.

- The Karnataka government had proposed to construct a **dam across the Cauvery River.**


Mekedatu project
Conceived in early 2000 as a hydroelectricity project
Proposed as a balancing reservoir in 2013
Cabinet clears the project in February 2017
Project involves construction of a balancing reservoir at Mekedatu, near Kanakapura, in Ramanagaram district
Located about 100 km from Bengaluru
Estimated cost (in 2017) ₹ 5,912 crore
The reservoir will have impounding capacity of 66 tmcft
Proposed to produce 400 MW of power and supply drinking water to Bengaluru and Ramanagaram districts
A file photo of the Cauvery at Mekedatu near Kanakapura.
Conditions laid down by the CWC
While the CWC has in principle allowed Karnataka to take up the DPR for the project, it has imposed some conditions. They include:
1. Karnataka to consider points raised by Tamil Nadu. View of other co-basin States to be taken into consideration so that inter-State issues can be resolved amicably
2. Acceptance of the project by Cauvery Water Management Authority is a prerequisite for consideration of the DPR by the Advisory Committee of the Ministry of Water Resources
3. The DPR has to be prepared in due consultation with the Central Electricity Authority and the Central Water Commission
4 The cost of preparing the DPR to be borne by Karnataka

Mekedatu project:

- Mekedatu Balancing Reservoir is a **proposed gravity dam in Karnataka** which aims **to store 67 tmc water**, a part of which will be **pumped to water-starved Bengaluru and Kanakapura.**
- The project is estimated **to submerge over 7800 acres of Cauvery Wildlife Sanctuary** and over 4500 acres of the **adjoining reserve forests**.
- The project was **first proposed along with Shivanasamudra hydro power project** at Shimsa in 2003 with an intention to use the **water for a hydro power station** and supply drinking water to Bengaluru city.
- Neighbouring state of Tamil Nadu fears the project would further **deplete its meagre share of Cauvery water**, which is crucial for cultivation of paddy fields in the Thanjavur-Nagapattinam-Trichy delta region.
- At Mekedatu, river Cauvery **dives into an amazing gorge**, facilitating the creation of a complex riverine forest.
- The word mekedatu, roughly translated from native Kannada language, means **"goat's leap".**
- It connects the **Biligiri Ranga Hills National Park** and **Male Mahadeshwara Hills.**

Dispute over Mekedatu project:

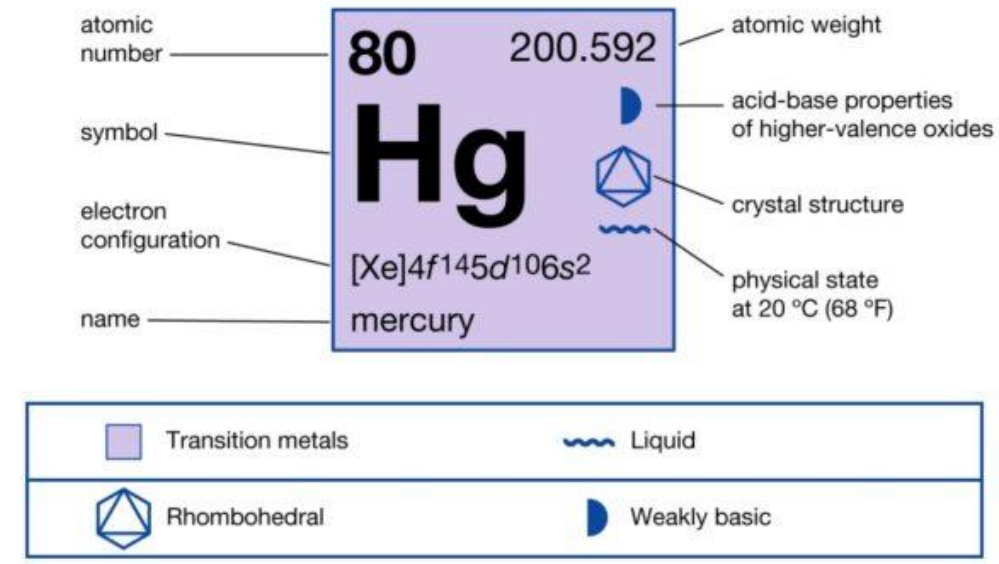
- The dispute between **Karnataka and Tamil Nadu** over the sharing of Cauvery waters is decades old.
- For many years, both the states have been maintaining differences over the sharing of water.
- Tamil Nadu objected the Mekedatu project saying Karnataka had not sought prior permission for the project.
- Its argument was that **the project would affect the flow of Cauvery water** to Tamil Nadu.

## 8.29 Climate Breakthroughs Summit

- The **Climate Breakthroughs Summit** took place virtually May 27, 2021.
- It is a **collaboration** between:
  - World Economic Forum
  - Mission Possible Partnership
  - United Nations Climate Champions
  - United Kingdom Climate Change Conference (COP26) Presidency.
- The summit had discussions focussed on steel, shipping, hydrogen and nature-based solutions needed to achieve a **net-zero carbon emissions in future.**

## 8.30 High levels of mercury found in rivers linked to Greenland Ice Sheet

**Mercury**

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According to a recent research, **high concentrations of mercury were found** in the water bodies fed by the Greenland Ice Sheet.

- The mercury content in the rivers and **fjords of southwestern Greenland** was similar to that found in the polluted inland rives of China.

Highlights of the findings:

- The scientists found dissolved mercury levels **in excess of 150 ng L-1**, far higher than an average river. The dissolved mercury content in rivers are about 1 – 10 ng L-1.
- Greenland is a major seafood exporter. The large volumes of the **metal can find its way into the coastal food webs through bioaccumulation** and impact the Arctic ecosystem.
- The findings strengthen a growing body of research that dismisses the conception that glaciers have little or no influence on the Earth's geochemical and biological processes. It opens a new chapter in understanding the impacts of global warming.

Key facts on Mercury

- The symbol **Hg** that mercury is known by comes from its Greek name, **hydrargyrum**, which means "liquid silver" — to reflect its shiny surface.

- The element is also known as **quicksilver for its mobility**.
- The element **conducts electricity** and is **used in electrical switches of thermostats** and clocks.
- Due to its **high density and compactness**, mercury is also used to make **thermometers, barometers**and other scientific instruments.
- Phase at room temperature: **Liquid**
- Atomic number (number of protons in the nucleus): **80**
- Mercury is a very toxic element.
- It can enter the body through an open wound or by inhaling or ingesting it. It can then **cause damage to nerves**, **the liver and the kidney**, as well as a number of other symptoms.

## 8.31 Didymocarpus vickifunkiae

Scientists from Indian Institute of Science Education and Research (IISER) Bhopal found the variant of the **African violets in Mizoram** for the first time in India.

Didymocarpus vickifunkiae:

- Commonly known as **African violets**.
- Genus belonging to the plant family**: Gesneriaceae**.
- Didymocarpus vickifunkiae is currently known from **only three locations** near the north-eastern State's border with Myanmar.
    - Members of its family are distributed in Asia from Western Himalayas to Sumatra,
- It is an **epiphyte** — a plant that **grows on trees** — and **produces light pink flowers** during the monsoons.
- The species has been named after **Vicki Ann Funk,** a noted botanist who worked at the Smithsonian Institute in the U.S.
- It is considered an **endangered species**.

## 8.32 Odisha's blackbucks double in 6 years, reveals census

According to the latest population census released, Odisha's blackbuck population has doubled in the last six years.

- The census was carried out by the state forest department February 28, 2021.

Highlights of the population census report:

- The **antelopes numbered 7,358** — 4,196 females, 1,712 males and 1,450 young.
- **Blackbucks are found only in the Ganjam district** in the southern part of the state, which is where the census was carried out.
- It used to be sighted in the Balukhand-Konark Wildlife Sanctuary in Puri district till 2012-13, but now has **vanished from the area**.
- The numbers were 6,875 in 2020, 4,082 in 2018, 3,806 in 2015 and 2,194 in 2011.
- Improvement of habitats, **protection given by the local people** and forest staff were some of the reasons for the increase of the population of the blackbuck in Ganjam, Satya Narayan Behura.
    - The people of Ganjam had been enthusiastically protecting the animal like the Bishnois of western Rajasthan and the Vala Rajputs of Saurashtra.

Blackbucks

- The blackbuck (Antilope cervicapra), also known as the **Indian antelope.**
- It is native to Indian and Nepal.
- It inhabits grassy plains and lightly forested areas with perennial water sources.
- The blackbuck is a **Schedule-1 animal** according to the Wild Life (Protection) Act, 1972 (amended in 1992) and is considered as **'Vulnerable'** according to the Red Data Book.
- The blackbuck is known in Odisha and Ganjam as **Krushnasara Mruga**.

## 8.33 Declining forest bird species in Western Himalaya

A new study that analysed the natural oak-dominated forests and modified forests of Uttarakhand has noted that there was a **drastic loss of bird species in all modified landscapes**.

- The State of Uttarakhand is home to the Western Himalayan temperate forests which harbour a large number of endemic bird species.

Highlights of the study:

- The researchers studied an area of about 1,285 square kilometres between the altitudes of 1,700 and 2,400 metres.
- Six major land-use types which included **natural oak forest, degraded oak forest (lightly used), lopped oak forest (intensively used), pine forest, agricultural cultivation area** and sites with buildings were studied.
- The results showed that **there was a low diversity of species in monoculture areas** and urban sites.
- They also noted **a drastic loss of pollinator birds and insectivores** in the degraded forests, monocultures and urbanised sites.
- **Strong decline in some of the habitat guilds** in the areas that experienced land-use change.
    - Habitat guilds are groups of bird species that have common habitat preferences.
    - For instance, forest specialists include species which forage and breed only in dense protected oak forests at this altitude, while forest generalists can adapt to modified habitats such as orchards and degraded forests.
- Many of the species that dropped out of the modified land areas were recognised oak forest specialists such as rufous-bellied woodpecker, greater yellownape, rufous sibia, white-throated laughingthrush and black-faced warbler.

Key facts on Western Himalayan broadleaf forests:

- The broadleaf forest sits in the mid-elevation in the western Himalaya.
- This ecoregion is a **narrow band between 1,500 and 2,600 m in width**, starting from the deep creeks of the **Kali Gandaki River gorge** in Central Nepal through northwestern India into Pakistan westward.
- The climate is seasonal. The southwest monsoon brings rainfall from June to September, but this region receives **less precipitation than the eastern Himalaya**.
- The drier conditions influence the vegetation, and the **tree line declines from 4,000**

**m** in the east to about 3,500 m in the west.

- This ecoregion is a **critical link for the altitudinal migrations of a suite of birds**, such as river chats, dippers, drongos, forktails, wagtails, fantails, sunbirds, and redstarts.
    - These birds winter in the low elevation ecoregions and migrate to higher elevations for the summer, using the broadleaf forests as a habitat corridor or as summer habitat.
- The ecoregion has **two distinct forest types**: the evergreen broad-leaved forests and the deciduous broad-leaved forests.
    1. The oak forests on drier and higher slopes are mixed with various conifers, such as fir, abies, spruce, cedar, and pines.
    2. The deciduous broadleaf forests are composed of walnut, Himalayan horse chestnut, alder, maple, Himalayan poplar, Himalayan elm, and Turkish hazel.

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